The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. X. No. 249 MARCH 22, 1924 Prepaid Annual Subscription United Kingdom, £1.1.0; Abroad, £1.4.0.

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NOTICES.—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE *is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.*

Editorial and General Offices—8, Bouverie St., London, E.C.4.

Telegrams: "Allangas, Fleet, London." Telephone: City 9852 (6 lines)

Chemistry in Public Affairs

DR. DUNN in his address to the Institute of Chemistry on "The Progress of Chemistry in Public Affairs," traced in a practical way the remarkable progress which the science of chemistry has made in the matter of public service. When the Chemical Society was founded over 80 years ago, there was scarcely any organisation in existence for the teaching or for the practice of chemistry, and the utilisation of the chemist by Government departments was unknown. Now, as Dr. Dunn pointed out, Government service is one of the most important branches, and one in which the public directly benefits from the work of the chemical staffs to an extent far beyond its own knowledge. Up to a much more recent date there were only the scrappiest facilities for scientific education, and chemical students had to go abroad if they intended to follow even moderately advanced studies. Now the complaint is rather the other way—that the facilities exceed the needs and are producing a larger number of chemists than industry can absorb. In industry itself, though the recognition of the value of chemical departments is not universal, there are few large concerns to-day which would consider their equipment complete without at least some provision for a chemical service, while many of our greatest industries owe their rapid extension primarily to the application of chemical knowledge. Then, in the matter of organisation, there has been such a rapid growth of societies that we are threatened with an excess of organisation, and a movement is already started towards reduction and consolidation.

The part which chemistry in these different ways has come to play in the life of the community is a large and vital one, and yet the work is so quietly performed that it may be almost completely unknown to the public. There is, in fact, a field for a book of unusual public interest if some writer with the necessary gifts of imagination and popular exposition could be found. In the course of the discussion the familiar point was raised of securing a degree of publicity for chemistry corresponding to its public importance. It is doubtful, however, whether chemistry will ever get its due in this respect until there is a frank and open discussion among all the bodies interested and the numerous incentives to secrecy are removed. It is curious how the fear of having current opinions reported persists, and how ill-balanced is the official judgment of what is and what is not matter of public interest. Occasionally papers and discussions of first-rate value are completely suppressed for fear of something or other that is never defined, while, when it is decided to organise open meetings, the matter too often is of no interest to anybody. In this matter there is decided need of education, which can only come by means of frank discussion, but there are signs occasionally that the old prejudices are slowly weakening.

The Chemical Engineering Library

ALTHOUGH the deficiency has been partly remedied within the last year or two, there can be no denying that the chemical engineer, as we now understand and recognise him, has but little to turn to in the way of systematic and really up-to-date reference books. The books of the kind which are available are in the main descriptive, and while this kind of information is undoubtedly helpful it is of little use to those who want to get a grasp of the scientific principles underlying the construction of some particular apparatus. We may turn to the standard works on pure or applied engineering, as the term is ordinarily understood, but even then the chemical engineer has no guarantee that

he will find what he requires, for his range of activity usually covers a field of a much wider character. It would seem that the only satisfactory manner in which comprehensive text-book literature can be provided is by rigorously sectionalising the whole science and practice of the subject, putting each specific section in the hands of a specialist author, and publishing the information in the form of a comprehensive library of small and low-priced volumes.

Some two years ago Ernest Benn, Ltd., commenced to publish a series of small volumes with this end in view, and the demand which has arisen for these volumes clearly demonstrates that they have filled some particular requirement in the chemical engineering profession. The number of subjects which could profitably be dealt with is, of course, almost unlimited, and in some instances it is not always an easy matter to light upon an author who, in this comparatively new science, can write with authority and experience. However, it is encouraging to hear from Ernest Benn, Ltd., that they have made extensive arrangements for adding considerably to the number of volumes which have already appeared in the *Chemical Engineering Library*. In fact, some fifteen additional volumes will probably appear within the next few months, a further fifteen volumes following in 1925. A glance at some of the titles of the new series (the volumes of which will contain about twice as much matter as those which have already appeared) leaves the impression that there will be few subjects of current interest and importance not provided for. For instance, among those due for early publication we notice "Colloid Mills," "Mechanical Roasting Furnaces," "Acid Reaction Chambers," and "Chemical Works Costing." The list of volumes now in hand would appear to cover all those subjects which readily occur to one as worth treatment; but should any of our readers have suggestions to make we shall be glad to pass them on to the right quarter.

Raw Materials for Acid Production

THE sulphuric acid industry has, in common with all other industries, passed through difficult times in the last few years, and it is not altogether surprising that complaints as to the price of so indispensable a product have been voiced by the large and varied list of consumers who cannot get on without it. One has to bear in mind, however, that the ultimate sale price of acid must bear some fairly close relation to the percentage of plant capacity which it is possible to use, and that when the demand falls short of the potential supply every manufacturer finds such things as standing charges showing a pretty substantial increase per ton of acid produced. In pre-war years the demand was such as to enable the then existing plants to be operated up to 85 per cent. of their total capacity. The war came, and the percentage was carried up to something not far short of 100; but the industry was badly hit in the depressing period of 1921-22, when the demand called for the use of less than half of the total productive capacity of the country. Last year things seemed to show a decided improvement and at the present time it is understood that manufacturers are able to find a sale for about 65 to 70 per cent. of the potential output, but even now it cannot be said that the figure has reached a stage when manufacture can be conducted on a really economical basis.

There is one salient feature in connection with sulphuric acid manufacture which seems to stand out above all others when a survey is made of the conditions ruling during the past decade. Before the war by far the greatest quantity of acid was produced from pyrites, but within recent years the consumption of spent oxide has undergone quite remarkable extension, while the increased use of sulphur also attracts notice. Prior to 1914 only some 3,000 tons of sulphur per annum were employed, but mainly owing to the operation of the Government Grillo plants, the figure rose in 1917 to the exceptional total of 45,000 tons, and—more remarkable still—this consumption was shown to be maintained when figures were issued in connection with the year ending June last. The situation brings to mind what has happened in late years in the United States, where sulphur seems largely to have replaced pyrites, and where it is believed only some 10 per cent., or less, of the total output is now made from imported pyrites. It will be interesting to watch the development of the use of sulphur in this country during the next few years, and to see whether manufacturers over here are likely to follow the American lead. The question is, of course, purely one of economics, and the somewhat harassed consumer of sulphuric acid must not by any means look for alleviation from a departure of the kind.

Crushing Taxation on Industry

TAXATION in the United Kingdom has now reached the alarming figure of £15 18s. per head, which is far in excess of that paid by any other nation in the world, or more than double that inflicted upon any foreign country, including the United States. We pay 35s. more per head than the combined total taxation per head of our three debtor countries, viz., France, Germany and Italy. This represents an increase in the burden of taxation on British industry of 350 per cent. over the figure for the year 1913, whilst continental countries nowhere show an upward movement of even half this extent. Moreover, since the Chancellor's statistics refer only to Central Government taxes, it may be accepted as almost a certainty that a comparison of rates levied by local authorities would again be unfavourable to the United Kingdom. Till such uneconomic bias is removed the hoped-for trade revival will be impeded at every turn, and in view of the facts set out it is some comfort to learn that the Premier has received a deputation, representing twenty manufacturing associations, and has promised consideration of their case for a relaxation of the taxation upon industry in order to enable British goods to compete both in the home market and in foreign trade on a more equitable basis than is at present possible.

American Chemical Trade Outlook

THE annual analysis of conditions in the United States chemical and drug industries, prepared by *Drug and Chemical Markets*, makes an interesting study. On the pretty safe assumption that the conditions of industry generally will be reflected in the chemical industry, it is estimated that the movement of goods will be in normal volume, and that a quiet conservative type of prosperity, devoid of any sharp changes, will reign. Business activity throughout the current year is expected to be at least equal to that of 1923, but may be more evenly distributed, declining somewhat in the spring but recovering later in the year. On this basis of normal general business the American chemical industry is counting on a normal consumption of its products throughout 1924. The large number of chemical producers in the United States is, however, causing some concern. There is a distinct fear of over-production, with the natural consequence of pressure on prices. Selling prices are said to be already practically on a level with costs in many instances, and in heavy chemicals especially a year of keen competition is looked forward to.

As regards export trade, it is remarked that things have been so poor in recent years that they can scarcely become worse. United States exporters report an improvement in Europe, the Far East and South America. This, it is pointed out, may mean better demand for some American chemicals and drugs, but it may also mean greater competition from the producers of these countries as their respective positions gradually improve. The final conclusion is that "in spite of keener competition from the outside, the American chemical industry very evidently must sell its excess production in the export markets if the present size and output are to be maintained without disastrous results within the industry."

Trade Improvement Maintained

IT is satisfactory that the improvement in the overseas chemical trade of this country which set in last autumn continues to be maintained. During February, in spite of the incidence of the railway strike and the dock strike and the consequent dislocation of business, there was an improvement of some £400,000 in the value of chemical exports and of £76,000 in the value of imports, compared with February of last year. Certainly there was one more working day, but the improvement far more than equals the effect of this. Comparison with the figures for January shows an increase in the value of imports of over £102,000, although exports have fallen off by some £161,000, hardly a serious decrease on a total figure of over 2¼ million pounds. A year ago some improvement in the overseas demand for sulphate of ammonia, synthetic dyestuffs, and coal tar products generally, was already apparent, but the figures are still well above those of that time. It is interesting to note also a marked improvement indicated in the outgoing quantities of heavy chemicals such as caustic soda, sulphuric acid, and ammonium chloride.

Points from Our News Pages

An article by Mr. A. Ogilvie reveals the differences in the preparation and marketing of fertilisers, here and in the U.S.A. (p. 288).

A lecture by Dr. J. T. Dunn, at the Institute of Chemistry, brought out clearly the growing recognition the chemist is receiving in public affairs (p. 290).

The Board of Trade Returns for February show that the improvement in the overseas chemical trade has been maintained (p. 291).

Major A. G. Church made some significant references to the proposed Anglo-German Dyestuffs agreement, in an address on Science in Industry (p. 292).

Fairly satisfactory business is reported for the past week in the London chemical market, but export inquiry has fallen off (p. 302).

The week has been quiet in the Scottish chemical market, and prices of Continental materials have tended to rise (p. 305).

Books Received

LABORATORY EXPERIMENTS IN CHEMISTRY. By N. Henry Black. New York: The Macmillan Co. Pp. 168. 5s.

FUEL OILS AND THEIR APPLICATIONS. By H. V. Mitchell. London: Sir Isaac Pitman and Sons, Ltd. Pp. 172. 5s.

PROCEEDINGS OF THE PHYSICAL SOCIETY OF LONDON. Vol. 36. Part 2. London: The Physical Society. Pp. 84. 6s.

The Calendar

Mar. 27	Chemical Society Annual General Meeting. 4 p.m.	Burlington House, Piccadilly, W.1.
27	Royal Society: Papers by Professor W. A. Bone, A. R. Pearson and R. Quarendon and others. 4.30 p.m.	Burlington House, Piccadilly, London
28	Royal Institution of Great Britain: "Insulin." Dr. Hugh Maclean. 9 p.m.	21, Albemarle Street, London, W.1.
28	Chemical Engineering Group: "Kinetic Elutriation." L. Andrews. 6 p.m.	Institution of Civil Engineers, Great George Street, London, S.W.1.
28	Joint Dinner of the Society of Chemical Industry (Newcastle Section), Newcastle Chemical Industry Club, and the Newcastle Section of the Institute of Chemistry. 7.30 p.m.	Tilley's, Blackett Street, Newcastle.
Apr. 1	Hull Chemical and Engineering Society: "The Constitution of Coal." A. R. Warnes. 7.45 p.m.	Hull Photographic Society's Rooms, Grey Street, Park Street, Hull.
2	Society of Public Analysts. 8 p.m.	Burlington House, Piccadilly, London.
3	Chemical Society: Ordinary Scientific Meeting. 8 p.m.	Burlington House, Piccadilly, London.
3	Institution of Mining and Metallurgy: Annual Dinner. 7.15 p.m.	Hotel Victoria, Northumberland Avenue, London, W.C.
4	Chemical Engineering Group: Joint meeting with Society of Chemical Industry (Birmingham Section) "The Premier Emulsifying Mill and other Colloid Mills." Capt. F. T. China.	Birmingham.
4	West Cumberland Society of Chemists and Engineers: "Froth Flotation of Coal." Major J. G. Scoular and B. Dunglinson.	Technical College, Workington.
4	Royal Institution of Great Britain: "The Nucleus of the Atom." Sir Ernest Rutherford. 9 p.m.	21, Albemarle Street, London, W.1.
4	Society of Chemical Industry (Manchester Section): Annual General Meeting. "The Tautomerism of Amidines." Professor F. L. Pyman. 7 p.m.	The Textile Institute, St. Mary's Parsonage, Manchester.
7	Society of Chemical Industry (London Section): Ordinary Meeting. 8 p.m.	Burlington House, Piccadilly, London.
7	Institution of the Rubber Industry: "Solid Tyres." W. Bond. 8 p.m.	The Engineers' Club, Coventry Street, London.

American Practice in the Superphosphate Industry

By A. Ogilvie, A.M.I.Mech.E.

In the following article the author deals with the production of superphosphates as carried out in America, where production is on a large scale by a few firms, the product being then passed on to the suppliers of mixed fertilisers.

THE developments in the fertiliser industry in the United States have been along lines somewhat different from those followed in the European field. The largest works confine themselves solely to the manufacture of superphosphate, and many of them are designed on a very large scale. On the other hand, a large number of firms in the trade do not manufacture any "base goods" at all, but simply confine themselves to the making-up of compound manures. There are some works in America capable of producing 1,000 to 1,400 tons of superphosphate per day of twenty-four hours. The sites of most of these large factories have been carefully chosen; they are to be found on the seaboard with excellent facilities for sea and rail transport. They are equipped with up-to-date machinery for the mechanical handling of large quantities of material in and out of the works. The phosphate grinding plant installed at any one of these big factories is larger than anything we have in Europe. At one particular works, eleven Raymond mills stand in a line and deliver the ground phosphate to a large storage silo holding several days' supply.

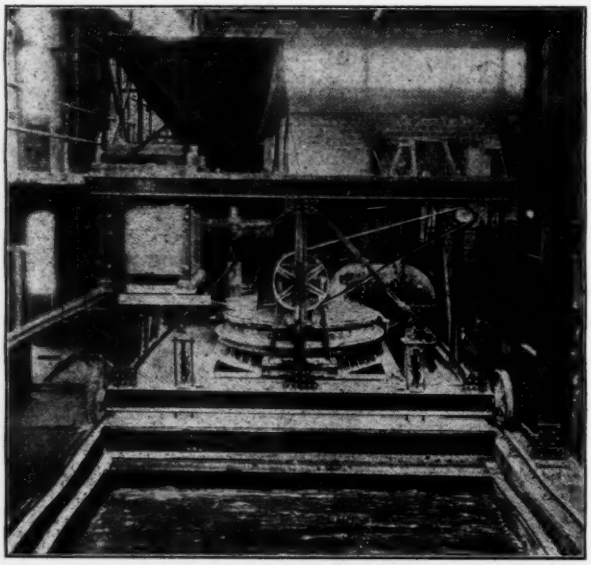

FIG. 1.

From data received from various factories in America the five-roll Raymond mill grinds approximately 3¼ tons of Florida pebble phosphate per hour to a fineness of 95 per cent. through a 100 mesh screen, and the power required is 85 kilowatts per hour; this gives a power factor of 24 kilowatts per ton per hour of rock ground. This is approximately twice the power consumption in England with mills of the ring and roller type, but electrical power is cheaper in America than in England, which compensates for the high power consumption such mills require. The Maxecon and Sturtevant Mills are also very popular in American works, and it is quite common to see five of these mills working in conjunction with air separators installed in one plant.

The tendency in the industry in America to-day is to grind the rock to a finer degree, and air separation has facilitated this advance. There are now few works screening the ground phosphate. The fineness of grinding varies between 5 per cent. to 15 per cent. residue on a 100 mesh screen. The superphosphate dens at most of the large works in America consist of square chambers built in concrete, standing approximately 40 feet from the ground to the top of the den. Each chamber is about 20 feet square, open at the top, and holds approximately 250 to 300 tons of superphosphate, and there are generally four in a line.

Two movable mixing platforms are mounted on top of these dens and traverse the whole length, making their own seal with any one of the four chambers. On each moving platform are mounted two mixers of the vertical type; two acid measuring machines and two phosphate weighing scales, in a manner as shown in Fig. 1. Three men generally operate one of these mixing platforms, and it takes approximately six hours to charge a 250-ton den. This reduced to man power averages fourteen tons per hour per man, which is a much slower rate of mixing than is common in up-to-date English works. The excavation of the den is accomplished by means of an overhead electric crane with an "orange peel" bucket. The grab bucket is lowered into the den and it takes approximately five hours to excavate approximately 250 tons, and deposit the superphosphate in the store.

In most of the American works the vertical mixer of the shallow type is used. This mixer has two stirrer shafts working in opposite directions on either side of the centre line with the plug opening in the centre. A charge of two tons is generally put in, but one cannot but observe that on account of the dead spots between the circles covered by the stirrers, a part of the charge does not appear to get thoroughly mixed. Immediately the plug is opened the liquid mixture runs out, leaving a very stodgy mass to be pushed out slowly, which appears to be well drained of acid.

Another method employed in excavating the large stationary dens is as follows: The den is constructed on the lines of the old hand dens which were lately used in this country, and consists of a rectangular chamber with a movable door at one end. Such dens are built to hold as much as 600 tons. Along the floor of the den opening doors are arranged which connect with an underground subway, through which runs a tray conveyor.

The superphosphate is excavated by means of a "Thew" shovel which travels into the den under its own power and digs into the face of the block, dropping the contents on to the floor. The superphosphate falls through the openings on to the tray conveyor and thence to an elevator boot. Three men are generally required to operate this system; one man operates the machine and two men poke the material down through the openings. The wear and tear on the "Thew" shovel is very heavy; it generally cuts at the rate of approximately 50 to 60 tons per hour (Fig. 2).

The American fertiliser manufacturers have not yet accustomed themselves to the accurate weighing of the phosphate and acid. With very few exceptions their weighing and measuring appliances are dependable on the careful manipulation of the operators, so that human fallacy is not provided against, and the works chemist is not sufficiently protected. To cut off the flow of ground phosphate by hand at the instant the scale balances is practically a work of art and in nine cases out of ten the operator is late. To measure acid by watching the rise of liquid in a small tube is very crude, because a slight error in vision is multiplied many times in the acid bowl. The average works chemist one meets in the States is cognisant

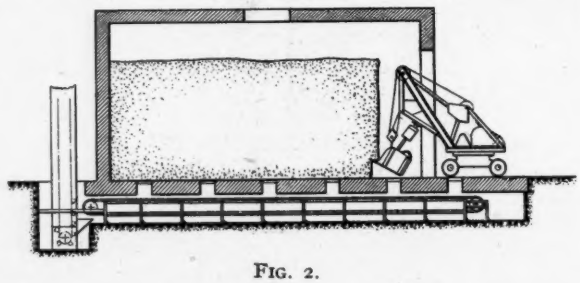

FIG. 2.

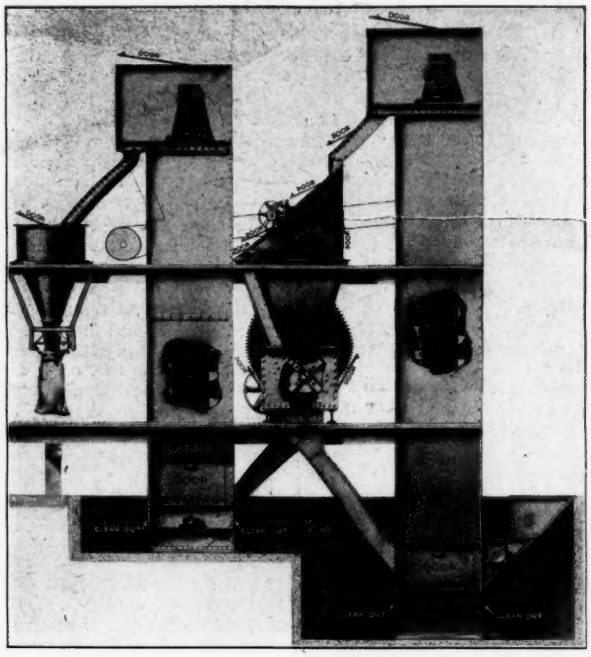

FIG. 3.—MIXING UNIT.

of the inherent fallacies of these methods, and when he comes to Europe is much impressed with our more accurate appliances.

It is in the compounding of manures that the Americans are ahead of us. They employ high grade machinery for the purpose, and their mixing plants are practically automatic and designed for large capacities. Nowhere in America does one see handmixing being done, which is still found in many works in England. The batches of various ingredients are brought to a receiving hopper, elevated and screened. The screens used are of the inclined type, and they are vibrated in various ways. The mechanisms employed are all more or less ingenious and keep the screen surface in a continual and violent state of vibration. The fine material is collected in a hopper which stands over an automatic mixer. The hard cores or "tailings" rejected by the screen are passed to a high speed pulveriser, which powders them in one operation. They are again elevated and passed over the screen, and eventually join the main batch in the hopper over the mixer. As soon as the screened batch is collected in the manner described, it is fed into an automatic batch mixer of the drum type. This

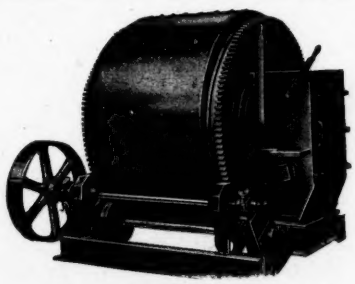

FIG. 4.—FERTILISER MIXER.

machine is generally designed to take a charge of one ton, although there are larger and smaller sizes in use.

Inside the drum ploughs are arranged, which pick up and throw the materials in all directions. It only takes a few minutes to mix the batch, and the latest type machine built by the Sturtevant Mill Company is designed to feed and discharge at the same end, thus minimising the chances of leakage. The accuracy of these mixers is dependable, and all that can be desired. The batch is generally discharged into a second elevator which feeds to a sacking hopper.

With such a plant as that described and illustrated (Figs. 3 and 4) it is possible to mix and weigh off 200 to 250 tons per day of compound manures, and the power required to drive is 25 to 30 b.h.p. In several works four such plants may be seen standing in a line along the length of the store. They deliver the fertiliser in weighed sacks to a loading platform, from which they are loaded into railway wagons. It is possible for a works having four such plants to send out 1,000 tons of mixed fertiliser in one day—a thing unheard of in this country.

Reactivation of Decolorising Carbon

A Furnace for Handling Powdery Material

THE increasing use of large quantities of powdery decolorising carbon necessitates the reactivation of the used carbon for many industries, as otherwise the process of decolorisation would not be economic. The reviving of decolorising carbon is, however, troublesome on account of the typical properties of this material. After use it contains ingredients of the liquid in which it has been used, even with the most careful washing. These consist of the colouring matter, traces of sugar, if the liquid was a sugar solution, and other organic compounds. Attempts have been made to remove these substances by boiling with acid or soda, or both consecutively, but these or similar ways of reactivating the carbon have never been successful, as the compounds adsorbed cannot be removed perfectly in this way. Consequently a carbon revived in this way will always be much inferior to fresh decolorising carbon as regards decolorising power. The revivification of granular animal carbon (bone-black) was formerly carried out by heating in retorts, preferably vertical ones, in which the carbon circulates by its own weight. Horizontal retorts, in which the carbon is agitated by a transporter-screw, are, however, also known for this purpose. Before or after heating, the carbon is washed with soda-lye or acid.

This process has now been largely adopted for the reactivation of powdery decolorising carbon. The usual way of heating in a vertical retort turned out to be an impossibility, while heating in a horizontal retort, with which the carbon is continually supplied and removed by transporter-screws, was very difficult. The "Purit" Company of Groningen, Holland, have now introduced a furnace of very simple construction, which consists of a horizontal cast-iron cylinder having a diameter and length of about 4½ ft. Inside the cylinder there is a horizontal shaft and stirrer, which is driven by mortice-wheels and worm-wheel so as to periodically change the direction of rotation, so that the shaft consequently alternately rotates to the right and to the left. The whole is walled in with fire-proof material, round which flue gases are conducted.

Method of Operation

The carbon is first thoroughly washed in the filter-press and then dried as completely as possible by means of steam or hot air. The dried carbon is put into the cylinder. The furnace is then fired up, and the stirrer is set in motion to prevent the carbon clogging together during the process. The carbon is then heated in the furnace in absence of air, the temperature being about 900° C. The process is considered complete when a sample of carbon from the furnace boiled with a solution of lye in water imparts no coloration to the filtrate. The carbon is then removed out of the cylinder by opening the exhaust-flap; meanwhile the stirrer itself works the carbon then out of the cylinder into a water-tank. From this tank, in which it is kept in suspension by a stirrer, the carbon is pumped with the water out of the tank to a filter-press.

With continuous working of the kiln about 100 kilos of coal are required for the reactivation of 100 kilos of carbon, and with a normal type of furnace it is possible to deal with 500 kilos of carbon in 24 hours. The operation of the furnace necessitates the attention of one man only. A 1 h.p. motor is required for operating the furnace. In addition, 6 to 8 liters of hydrochloric acid of 20° Bé. per 100 kilos of reactivated carbon are required.

Carbon reactivated in this way, it is claimed, has not only got back its full decolorising power, but also its full filtering power, and the formation of carbon out of the adsorbed organic matter is of no prejudicial influence.

Chemistry in Public Affairs

Its Growth and Recognition Since 1841

In a lecture on "The Progress of Chemistry in Public Affairs" before the Institute of Chemistry in London, on Friday, March 14, Dr. J. T. Dunn gave a brief outline of the many directions in which chemistry has entered into the life of our community, and sketched the development of its influence.

The period covered by the lecture went back as far as 1841, when the Chemical Society was founded. At that date there was little application of chemistry to public life, and little recognition of the fact that it might be applied with advantage. As an example of the manner in which chemistry was looked upon at that time, Dr. Dunn quoted from an address by Dr. Russell, the President of the Chemical Society, at its Jubilee Celebration in 1891, in which Dr. Russell had said that at the time of the foundation of the Society public laboratories for the teaching of chemistry did not exist in London. The number of real students of chemistry in this country was very small. They were looked upon by their friends as being eccentric young men, who probably would never do any good for themselves. These few students found practical instruction in the private laboratories of some of the London teachers.

Two years later, in 1843, said Dr. Dunn, the Pharmaceutical Society established its laboratory for the use of its own students, and four years later the College of Chemistry was founded. Apart from its effect in hastening the progress of scientific chemistry, the formation of a society with such objects as those of the Chemical Society had a very considerable significance in forcing public recognition of the fact that there was such a thing as chemical science, and in preparing the public mind to recognise the bearings of this science, when they were pointed out, upon various aspects of public life.

Application of Chemistry to Foodstuffs

Coming to the directions in which chemistry had invaded and been applied to our public life, the lecturer dealt first with foods. Up to the date of the foundation of the Chemical Society, he said, the purveyor of food was under no compulsion to supply the quality of article which he professed to supply, and the substitution of inferior for better qualities of foods, and the adulteration of high-priced articles with cheaper substances of more or less similar properties, became rife. During the years 1851 to 1854 an investigation was carried out on the extent and nature of adulteration, and the work done was co-ordinated in Dr. A. H. Hassall's book on *Food and its Adulterations*, published in 1855, which brought out the enormous amount of adulteration existent at the time.

After the Adulteration of Foods Act of 1860, the Sale of Food and Drugs Act was passed in 1875. Under that Act our public analysts were now appointed, and, though amended and supplemented by other Acts, it was the basis on which all public effort for the suppression of adulteration was founded. There were also the provisions of the Butter and Margarine Acts and the regulations under the Public Health Act with regard to milk and cream, all imposing conditions to which sellers of these substances must conform, and which the public analyst must see were complied with.

In 1874 the Society of Public Analysts was founded, and a perusal of the contents of successive volumes of its journal, *The Analyst*, afforded a most instructive survey of the progress of knowledge in this department of chemical work.

The lecturer then turned to the chemical examination and control of the purity of water supplies which existed under public auspices. Water supply authorities were required to make periodical inspections of the water supplies which they controlled, and were responsible for closing supplies which proved to be polluted. Many authorities had appointed chemists to make regular examinations of the supplies, and frequently it was only upon the results of chemical and bacteriological examination of the water from a particular source that a judgment could be formed as to whether or not it was polluted. Again, the modern methods of dealing with sewage were essentially chemical processes, needing constant chemical and bacteriological supervision. Authorities appointed chemists to supervise and control the processes so as to ensure that the final effluent should be inodorous and harmless to any stream into which it might enter.

Work of the Alkali Inspector

With reference to coal smoke abatement, Dr. Dunn mentioned the work of the collection of data by the committee appointed at the International Exhibition in 1912, which committee established soot gauges all over the country, the deposited matter in the gauges being weighed and analysed monthly. Later the committee was taken over by the Meteorological Office. But there were more directly harmful substances introduced into the atmosphere, prominent among which, in the early days of the alkali industry, was the hydrochloric acid arising from the decomposition of salt in the first stage of the Le Blanc process for the manufacture of alkali. Some of the more enlightened manufacturers saw that the condensation of this gas was desirable, and as early as 1837 condensers were erected in the Liverpool district and on the Tyne. But in most works the nuisance continued, and legislation was passed from time to time compelling condensation of hydrochloric acid gas; in 1906 the whole of the regulations were consolidated, the number of gases scheduled as obnoxious or offensive was increased, and the variety of works coming under the operation of the Act was widened. The lecturer traced this legislation, to show how widely the work of inspection and control was extended. He also made reference to the hearty co-operation between alkali makers and Government inspectors since the initiation of legislation. An enormous amount of research work had been undertaken, and chemical science entered into the work much more than was the case when the Acts were concerned with nothing beyond the condensation of hydrochloric acid gas. The benefits accruing from the work of inspection indicated to many manufacturers, who perhaps would not otherwise have been impressed, the advantages to be derived from the scientific conduct of an industry, and the Chief Inspector, in his report in 1917, said that there had been a considerable extension in the number of those who recognised the advantages to be derived from the most efficient scientific works control.

A feature of comparatively recent years was the application of chemistry to the protection of workers in particular industries. In this connection the lecturer pointed to the investigations which led to the substitution of red for white phosphorus in matches, the work done in finding substitutes for lead in glazes, and the regulations in regard to the amounts of combustible gases permitted in the air of mines.

Chemistry in Government Departments

Reference was then made to the use of chemistry by Government departments for the testing of materials. The office of Admiralty chemist dated back to the middle of last century, and the War Office and the Air Force each had their chemical departments. The Ministry of Health, in the foods subdivision, carried out investigations, both chemical and biological, into various questions of food supply, and had published valuable results. The department which ranked first in the application of chemical science to public affairs, however, was that of the Government chemist. This department sprang from the establishment at Somerset House in 1843 of a laboratory under the Inland Revenue Department, primarily for the examination of tobacco, and the Custom House laboratory for the examination of wines and spirits and other articles paying Customs duties, which were amalgamated in 1894, placed under the direction of a single head, and officially termed the Government laboratory. The work of the laboratory gradually widened, and various other Government departments obtained permission to apply to the laboratory for advice and for analytical work they required carried out. This expansion rendered the staffing of the laboratory exclusively by Revenue officers undesirable, and in 1911 the laboratory was removed from the control of the Customs and Excise, and constituted an independent branch of the Government work, as the department of the Government chemist.

A comparison of successive issues of the list of official chemical appointments published by the Institute of Chemistry, said the lecturer, threw a very interesting light on the increasing extent to which the community was availing itself of the services of chemistry and chemists. For instance, the staff of the Government laboratory was given in the 1906 edition as 24, and in the edition now being issued it was 70; in 1906 the number of authorities which had established Drainage Boards was 33, and it was now 65; the number of pages devoted to chemical appointments in India, the

British Dominions, Colonies and Protectorates had increased from 28 to 50. One of the most satisfactory and gratifying differences between the first and last editions of the book lay in the great additions made under the title of research. The Admiralty, for instance, had a Department of Scientific Research and Experiment, which was not found in the first edition; the War Office, which in 1906 had a staff of 16 in the Ordnance Research Board, now employs about 70 in research on explosives and a further 25 on metallurgical research. The most prominent development was in regard to the Department of Scientific and Industrial Research, in connection with which the lecturer pointed to the work carried out by the various research boards, such as the Fuel Research Board, and the giving of grants-in-aid to research associations connected with particular industries. There were now 24 such industrial associations at work. The creation of the Department of Scientific and Industrial Research, and its ramifications, indicated a most healthy change in the attitude of the nation, and especially of the industrialists, towards science. It indicated the passing of the days of rule-of-thumb and workshop secrets, the founding of manufacturing processes upon scientific principles, and the pooling of knowledge. In a recent speech the Minister for War had said that he and his colleagues were deeply interested in the subject of research, and he stated that at Woolwich they had one of the finest research departments that it was possible to organise. It showed how large sums of money could be saved by scientific and research work, and possibly one of the best means of economy was to spend more upon such work. One would desire, said Dr. Dunn, that such an attitude should be in every way encouraged, and should be spread more and more widely amongst our people.

In the course of the discussion which followed the lecture, a good deal of emphasis was laid upon the necessity for giving publicity to the importance of chemistry in our daily life. Reference was made to the fact that so many people, when they heard chemistry mentioned, did not realise that it extended far beyond the pharmacist's shop. The money which the community was saved was also made much of, it being remarked by one speaker that, with the exception of the Income Tax Inspector and the medical profession, the chemist probably returned more per £1,000 spent on him that any other member of the community. Again, it was complained that chemistry was lending itself to the conversion of warfare from a noble art to indiscriminate massacre; but it was urged, on the other hand, that chemists had done a great deal to mitigate hardships during the late war, the work of chemists in regard to antiseptics and soon being instanced. The conscience of the British chemist, at any rate, was clear in regard to warfare. A point of some importance was the fact that a wealth of valuable material was shut up in Blue Books, which no one who had not been under the necessity of prying into would dream of.

The "Rongalite" Hearing Closed

On Thursday, March 13, when the hearing was resumed, the witness who had given evidence with regard to Messrs. Brotherton's process was cross-examined by Mr. Swan, *in camera*, and the remainder of the day was devoted to counsel's closing speeches.

Sir Arthur Colefax submitted that the whole basis of the complainants' case had gone. The case had been built up on the basis that sodium formaldehyde sulphoxylate was a body containing, in a state of loose combination, sodium sulphoxylate and formaldehyde—no doubt, he supposed, on the advice of Mr. Parry—but no chemist, with the exception of Mr. Parry, would say that this substance was formed in such a way from those two bodies. Again, there was no warranty for the statement that the active component of the combination was sodium sulphoxylate. It had been admitted that the two substances were organic, and therefore they were clearly synthetic organic chemicals. These bodies also fell within the definition of a fine chemical. The process was carried on in a factory which hitherto had never manufactured anything but fine chemicals, and he drew attention to the skilled scientific control needed and the purity of the product.

Mr. Swan, in his final address, reviewed the evidence, and contended that it went to show that the substance was not a fine chemical.

The Referee's decision will be announced later.

Chemical Trade Returns for February

Increase in Imports and Exports Maintained

As announced last week, both imports and exports of chemical products increased during February compared with last year. Imports of chemicals, dyes, drugs and colours were valued at £1,221,583, an increase on February, 1923 of £75,886, and of £102,566 on January last. Exports totalled £2,352,315, an increase of £400,109 on February, 1923, but a decrease of £160,815 on the January figure.

The figures relating to the quantities of specific products imported and exported, as given below, indicate that the most marked increases in imports occur in the case of bleaching materials, calcium carbide, sodium nitrate, coal tar intermediates and essential oils. Exports of sulphuric acid, caustic soda, and painters' colours and materials have undergone notable increases.

Imports for February

		1924	1923
Increases.			
Acid, tartaric, including tartrates	cwt.	2,364	2,278
Bleaching materials	,,	9,957	1,981
Borax	,,	9,840	8,404
Calcium carbide	,,	67,982	41,080
Crude glycerin	,,	3,725	1,329
Red lead and orange lead	,,	7,284	4,103
Sodium nitrate	,,	130,940	89,465
Intermediate coal tar products, including aniline oil, and salt, and phenyl glycine	,,	155	80
Indigo, natural	,,	114	—
White lead	,,	8,190	7,813
Painters' colours, etc., unspecified	,,	54,190	51,433
Essential oils, except turpentine	lb.	325,259	292,529
Turpentine	cwt.	32,978	15,225
Decreases.			
Acid, acetic	tons	424	526
Distilled glycerin	cwt.	179	273
Nickel oxide	,,	—	1,393
Potassium nitrate	,,	2,966	5,982
Potassium compounds, except nitrate	,,	439,901	483,912
Sodium compounds, except nitrate	,,	16,125	27,621
Cream of tartar	,,	3,929	4,684
Zinc oxide	tons	619	759
Alizarine dyestuffs	cwt.	435	712
Indigo, synthetic	,,	—	2,520
Unspecified coal tar dyestuffs	,,	2,123	2,393
Barytes, including blanc fixe	,,	36,978	55,870
Mercury	lb.	101,625	424,888

Exports for February

		1924	1923
Increases.			
Acid, sulphuric	cwt.	4,781	1,550
Ammonium chloride	tons	513	283
Ammonium sulphate	,,	24,648	22,159
Bleaching powder	cwt.	26,718	26,243
Anthracene	,,	2	—
Benzol and toluol	gals.	223,429	801
Naphtha	,,	31,628	2,405
Coal tar products, not elsewhere specified	cwt.	48,676	34,002
Copper sulphate	tons	12,216	8,575
Crude glycerin	cwt.	2,040	524
Distilled gycerin	,,	12,555	4,460
Potassium chromate and bichromate	,,	5,000	2,526
Unspecified potassium compounds	,,	4,350	2,489
Sodium carbonate, etc.	,,	495,460	442,937
Caustic soda	,,	157,891	120,993
Sodium chromate and bichromate	,,	4,798	4,423
Unspecified sodium compounds	,,	53,023	41,225
Zinc oxide	tons	885	135
Coal tar dyestuffs	cwt.	6,680	4,104
Dyestuffs, except coal tar products	,,	4,771	4,506
Paints and colours, ground in oil or water	,,	36,955	27,738
Paints and enamels, prepared	,,	33,015	21,769
Painters' colours, unspecified	,,	51,020	34,280
Decreases.			
Acid, tartaric	cwt.	1,192	1,867
Acid, carbolic	,,	9,750	10,153
Naphthalene	,,	10,909	12,776
Tar oil, creosote, etc.	gals.	1,640,009	1,668,768
Potassium nitrate	cwt.	1,780	2,050
Sodium sulphate, including saltcake	,,	36,665	41,551
Barytes, including blanc fixe	,,	1,404	4,101
White lead	,,	13,806	17,497

British Association of Chemists

London Section's Dinner

AT the annual dinner of the London Section, held at the Engineers' Club on Saturday, February 16, the chair was taken by Dr. Herbert Levinstein (President). Mr. C. S. Garland and Dr. Stephen Miall were among the guests. Letters from Professor Hardy, Mr. Chaston Chapman, and Professor Hinchley, regretting their unavoidable absence, were read.

The toast of the "B.A.C. London Section" was proposed by the President, who stated in his speech that the Association was doing for chemists what no other society could do. Most emphatic was his insistence that, as a rule, opposition proved a strengthening and purifying influence. The Institute of Chemistry had at first opposed them, and rightly; for they wished to see if the Association were sound at bottom. They had emerged from this trial of opposition with credit, and in consequence the attitude of the Institute, dictated by that fairness which had always characterised it, had undergone a change. In a general review of the activities of the Association, Dr. Levinstein expressed the opinion that, in particular, the Unemployment and Legal Aid funds had more than justified the hopes that had attended their formation.

Replying, Mr. Redgrove, chairman of the committee, communicated the satisfactory intelligence that the membership of the London Section had increased during the past year. He paid a tribute to the work of the London Committee. In the course of his remarks he likened the chemist to the agent of lubrication so necessary to the smooth progress of the wheels of commerce. All chemists, he said, ought to be good lubricants and well lubricated. (Laughter.) He was afraid some of his hearers had misunderstood him; he had not said well oiled. Lubrication was a scientific refinement of the process of oiling. Oiling, like every other good thing, could be overdone; but he felt it incumbent upon him to reassert that every good chemist ought to be well lubricated, with good lubricant. (Laughter.)

No Longer Revolutionary

Mr. Price, in proposing the health of "Kindred Societies," said it was a pleasure to know that the B.A.C. was no longer suspected of revolutionary aims. The Association's numerous activities, rather than trespassing in the domain of the older societies, sought to supplement their several aims. Far from being a competitive body, the Association desired, before all, a unity that would enhance the dignity and economic status of the profession.

Acknowledging the toast, Dr. Miall said that a sense of professional dignity and responsibility was the proper motive of the appeal to unite. However difficult it might be to deliver oneself from a certain passionate selfishness, it must be remembered that the advancement of science and industry was the first sound foundation of unity. Unity could only be realised through such aims as these, while economic benefit would follow as a necessary consequence. He cited as an example his own profession of law, showing how it was built on the foundation of "etiquette"—that outward and visible sign of fellowship in common endeavour.

Mr. Cory proposed the "Ladies and Guests" and expressed his pleasure at seeing so many ladies present.

Miss Wright, in replying, remarked that there ought to be at least one more lady member of the London Committee. (A faint uproar in one obscure corner of the room seemed to suggest that this proposal had been carried without a dissentient voice.)

Mr. Garland, in proposing the health of the President, insisted that, especially having regard to the present administration, an organisation such as the B.A.C. was absolutely necessary. He showed that no Government, least of all a Labour Government, could be expected to discuss matters of professional import with a profession that was not properly organised.

Dr. Levinstein, in replying, said he understood that one of the functions of a president was to be ornamental; and he trusted that he had satisfied the Council and members of the Association in this. (Laughter.) He had, however, tried to be something more. The Association was gaining in influence and prestige, and it was his certain hope that it would continue to do so always more and more.

As with most other social functions this winter, the prevalence of illness caused the attendance a little to fall short of the Committee's anticipations, but ample compensation was to be found in the atmosphere of confidence that prevailed. The apparent quiescence of the Association has not shaken the confidence of the members in it. There is an impression abroad that the Association has drawn back only the better to jump. That is accurate enough, as these premonitions not infrequently are.

Miss Dunford, Mr. and Mrs. Redgrove, Messrs. Cory, Price and Stanton provided an excellent musical programme.

Major Church, M.P., and the B.D.C.

The Question of Scientific Control

AT a meeting of the Industrial League and Council at Caxton Hall, Westminster, on Wednesday evening, Mr. Frank H. Elliott in the chair, Major A. G. Church, M.P., in an address on "Science in Industry," said that the primary concern of the scientific worker was not invention but discovery, which might or might not lead to industrial applications. The inventor and discoverer in the field of industry were complementary; the first needed the stimulus of glittering prizes, the other the sympathetic encouragement to proceed with his work, a reasonable and assured competence, and the provision of essential facilities. There was a grave possibility that this country might lag behind in industrial research unless far greater impetus was given not only by the Government for the encouragement of research in the universities and in industrial research associations but by industrialists themselves.

Dyestuffs Industry a Military Factor

Speaking of the attitude of commercial interests to new discoveries he instanced the case of Sir William Perkin's production of the first aniline dyestuff from coal tar, and pointed out that through commercial indifference in this country and contentment with the vegetable dyestuffs then in use, the discovery passed to Germany and became the foundation of a synthetic dyestuffs industry which not only supplied a great portion of the world's needs but became a great military factor in supplying essentials for explosives and poison gases. From this point there was some anxiety as to whether the British Dyestuffs Corporation was going to fulfil one of the essential purposes for which it was established, namely, the provision of a national school of dyestuff chemistry and a completely organised dyestuffs plant which would be available for national purposes in case of need. References had been made recently to a possible agreement with the I.G., and it would be a very serious thing for the dyestuffs industry in this country if it ever became dependent on German chemistry for its scientific knowledge. That was one danger that had to be guarded against, and in due course probably the matter would have to come up for discussion in Parliament. He believed that in an industry of this character the presence on the directorate of scientific men was essential, and until the recent appointment of Professor Perkin there was no representative of this class on the board. In the interests of chemistry and in the interests of the nation it was important that these matters should be very gravely considered.

In the course of discussion Mr. F. E. Hamer (THE CHEMICAL AGE) said that in the utilisation of the services of chemists and other scientific workers this country was less advanced than Germany and the United States, where a regular research service was generally regarded as an indispensable condition of progress. While here it was complained that industry did not absorb the number of chemists it ought to, in America there was a steady drift of the best men in the science departments of the Government into industry, commercial firms readily paying much higher remuneration than the Government did even to its senior and most distinguished scientists. As regards the dyestuffs industry he was constantly told that whatever was wrong with the industry the fault did not lie with the research men, whose work would compare with the best in the world. (Hear, hear.) It often required, however, long experiment and much works practice successfully to convert theoretical knowledge into economic commercial production, and the industry appeared to need

strengthening most in the design and management of chemical plant and generally in chemical engineering. As regards scientific direction of particular industries, there was some danger, perhaps, of drawing conclusions on inadequate inside knowledge, but if the Government favoured direct scientific representation on the board it could give effect to that principle in the nomination of its own representatives. In the discussion and criticism of such details it was, however, important to guard against the danger of discrediting a new national industry which had made astonishing strides and which by loyal co-operation all round could be brought to complete success.

Fine Glass Manufacture

Mr. J. H. Gardiner at the Northern Polytechnic

AT a lecture at the Northern Polytechnic, London, on Tuesday, March 11, Mr. J. H. Gardiner, F.C.S., dealt with " Fine Glass Manufacture."

The lecturer dealt first with the historical aspects of the subject, and exhibited specimens of Greek and Roman glass. Some specimens of Babylonian glass-ware still retained their original clearness, but others were more or less decomposed, and developed an iridescent surface due to the formation of small bubbles. Glass could be regarded as a mixture of melted silicates approximating in some cases to a definite chemical compound.

Glass Founding

Describing the present method in glass founding, Mr. Gardiner said that a modern furnace usually held ten or more pots, which were made from the finest fire-clay and held about fifteen hundredweight of glass. They were first brought to a temperature of about 1,200° C. and the dry batch was filled in, the fronts closed, and the temperature raised to about 1,400° C. and kept so for about 36 to 40 hours. Science had largely replaced many of the old empirical procedures and traditions of the glasshouse. Given a proven formula for a glass of a particular character it was only necessary to keep a proper check on the quality and condition of the materials—to see that they were correctly weighed and mixed—and after filling the batch into the pots, that a pre-determined degree of heat was applied for a given time and the result was certain. Heat treatment has been made easy by the modern furnace, and when reliable pyrometers were in use it was only necessary to give instructions that the temperature should be raised to a certain point during a given time, and that this temperature should be maintained for a period that varied according to the nature of the glass. After the melting temperature had been continued sufficiently long to complete the process the temperature was slowly lowered to the working degree, about 1,100°C.

Need for the Chemist

Flint glass, a lead-potash silicate of great density and refractive index, largely used for fine glass work, required the greatest care and attention from its founding until it was safely out of the annealing lehr. The materials used in its preparation had to be of the purest quality obtainable, and required constant checking by both chemical and physical examinations. The sand used was almost invariably brought from Fontainebleau, near Paris, where huge deposits of exceedingly pure silica were available. The iron contents of such a sand were about 0·03 per cent. The lead, potash, and other materials must also be very pure, but even then the exceedingly small trace of metallic impurity (chiefly iron), either from the material or from the pots and crucibles in which they are melted, would result in a glass with a more or less dingy or greenish tint that was often seen in early or in cheap glass-ware, and here the skill of the chemist came into play. The faint, pink colouration that resulted from almost homœopathic additions of manganese, selenium, and other so-called decolorisers, was made use of to neutralise the green colour due to iron, and the combination, if correctly balanced, resulted in a very clear crysta l glass. The greatest judgment was necessary in the use of these decolorisers, because while a deficiency failed to give the desired effect a slight excess produced a most unpleasant pink tinge, and as the final result was largely dependent upon the heat treatment during " founding " and the length of time that elapsed between the moment that the metal was ready for working and when it had left the hands of the workman, the lot of the responsible works chemists was an anxious one.

Different kinds of glass with special properties were required in different industries. Optical glass of different refractive indices was required; electricians demanded glass with a high or low dielectric constant, and so on.

The lecture concluded with a description of the manufacture of clinical thermometers, which was an operation requiring highly skilled workers.

Mechanical Structure of Rubber

Phenomena of Coagulation and Vulcanisation

A MEETING of the Manchester Section of the Institution of the Rubber Industry was held at the Midland Hotel, Manchester, on Monday, when Mr. R. W. Lunn, M.Sc., of the Leyland and Birmingham Rubber Company, read a paper entitled: " The Mechanical Structure of Rubber."

In the first place, he would refer to rubber in the form of latex. Rubber latex preserved with ammonia had now become a familiar substance. We owed the electrolytic view of the process of coagulation to Victor Henri. The suspended particles in latex were electro-negatively charged. This was demonstrated by the fact that if latex was submitted to the action of an electric current the particles migrated towards the positive electrode. According to Henri, the addition of positive ions to latex caused the neutralisation of the negative charges on the particles, and aggregates began to form. The degree to which aggregation took place depended upon the strength of the added electrolyte. A strongly positive electrolyte, such as acetic acid, caused a rapid and complete discharge of the electro-negative charge upon the rubber particles. Later workers had indicated unsatisfactory features in this view of the process, and a comprehensive theory covering the whole phenomenon was still lacking.

Henri's description of the action of the particles on coagulation was of particular interest in dealing with the structure of rubber. He stated that the first stage was the formation of small aggregates of a few particles. As coagulation proceeded, other particles joined up to these nuclei in straight-line formation, and, as the straight lines grew, they became interlaced with a network of other straight lines. Finally, the whole coagulum became a network of long filaments uniting all the globules in the latex. Immediately following coagulation, the globular particles still retained their identity as globular particles.

The structure of the coagulum and its relation to the coagulant was examined by Henri, who showed that a weak coagulant resulted in the mesh formation being very open in structure. With a powerful coagulant, such as acetic acid, the mesh was a fine and close one. He also stated that the fine mesh structure gave a strong elastic product, whilst the open mesh structure gave a weak, short product. These observations were of great interest, because Henri stated that these tensile properties persisted in the dry product.

Grain and Vulcanisation

The mastication of rubber gave a product which has a lower viscosity in solution than the original. This phenomenon might be due to an alteration in mechanical structure, but the phenomenon which did definitely convey an idea of mechanical structure was that of " grain." " Grain " effects were produced by milling, by extruding, and, most markedly, by calendering. Calendered sheet showed: (1) " with grain " a comparatively low extension with a high resistance to extension; (2) " across grain " a comparatively high extension with a low resistance to extension.

Rubber was used almost solely as a vulcanised product, and it was in the vulcanised product that a study of structure might lead to the most important practical results. There was, at present, no satisfactory explanation of vulcanisation. Weber formulated a theory that the process was entirely chemical. Ostwald attempted to explain it on a purely physical basis. Between these two, there were a variety of theories, but it could not be said that any one was entirely satisfactory. Personally, he had little doubt that the structure of rubber and the state of vulcanisation were inter-related, and light thrown on the one subject would finally illuminate the other.

In compounded articles grain effects were due to the pigment part of the system probably in far greater proportion than

to the rubber part of the system. The relation of rubber structure to the particle structure of pigments in connection with the physical properties of the compounds was an enormous subject which was barely yet touched.

Rubber stored up energy and released it again. In terms of the spheroidal theory, the spheres in its structure became distorted to ellipsoids and recovered their spherical form when a force had been applied and released. The actual change in volume under either condition was extremely small in the case of pure stocks.

Mr. Lunn then advanced a number of speculative propositions with respect to abrasion losses, stress-strain curves, and tearability in rubber, which gave rise to a very exhaustive discussion.

United States Chemical Exports

Upward Tendency in 1923

PRELIMINARY figures showing the United States export trade in chemicals and allied products for the year 1923, in comparison with 1922, indicate that the steady forward growth of the trade has been substantiated. The aggregate value increased 19 per cent.—viz., from $122,928,312 in 1922 to $146,147,420 in 1923. Beginning with September, 1922, and continuing until October, 1923, the curve, for the most part, was upward; but since October the line has been downward. Except for December, 1923, each month, however, has shown a decided advance from the corresponding month of the previous year.

The coal-tar products group, which advanced 62 per cent. in value from $7,621,808 in 1922 to $12,331,661 in 1923, recorded the largest gain of the commodity groups embraced by the term "chemicals and allied products." More than double the quantity of coal-tar crudes was shipped abroad in 1923 than in 1922, while intermediates improved 40 per cent. and finished coal-tar products 37 per cent. An increase of 40 per cent. was made in exports of coal-tar colours, dyes, and stains in 1923; on the other hand, medicinals fell 27 per cent. in value, and photographic chemicals declined 7 per cent.

Industrial Chemicals and Fertilisers

The industrial chemicals—total exports of which dropped 3 per cent. in value—which showed gains in 1923 were wood and denatured alcohol, ammonia and ammonium compounds, baking powder, acetate of lime, aluminium sulphate, dextrine, formaldehyde and washing powder, while those which showed losses were calcium carbide, bleaching powder, copper sulphate, potash bichromate, potash chlorate, and all other potassium compounds, acids, and all other industrial chemicals. Sales of soda and sodium compounds recorded a loss in value but rather an appreciable gain in quantity. Although the 1923 value of acetate of lime shipments exceeded the 1922 value, the 1923 quantity was less than the 1922.

Foreign sales of fertilisers and fertiliser materials throughout the year continued the expansion begun in 1922, until a gain of 24 per cent. was reached. A slight decrease in the price of phosphate rock characterised the trade in that commodity during 1923, but more sulphate of ammonia, superphosphates and prepared fertiliser mixtures left the United States in 1923 than in 1922.

Essential oils, medicinal and pharmaceutical preparations showed increases averaging 8 to 14 per cent., and the exports of paint pigments and varnishes increased 94 per cent. in values, carbon and lampblack being more than doubled

Research Chemist to Gas Light and Coke Company

WE understand that Mr. Harold Hollings, B.Sc., has been appointed to the new post of director of chemical research to the Gas Light and Coke Co. Mr. Hollings joined the chemical staff of the South Metropolitan Gas Co. in the autumn of 1915, and has since been engaged there in research work. He was the holder of the Institution of Gas Engineers Research Fellowship at Leeds University, and resigned his Fellowship on his election to an 1851 Exhibition Scholarship. He was allowed to suspend the latter scholarship in order to enter the laboratories of the South Metropolitan Gas Co.

Manufacture of Spun Concrete

Society of Chemical Industry: Nottingham Section

AT a meeting of the Nottingham Section of the Society of Chemical Industry, held on Wednesday, March 13, Mr. G. J. Ward, of the Stanton Ironworks, read a paper entitled "The Effect of Centrifugal Action on Concrete."

The manufacture of concrete pipes by a new process of "spinning" was the outcome of the action of centrifugal force upon concrete. If a concrete mixture is rapidly rotated in a cylindrical mould the concrete will be forced towards the periphery of the mould and will form a lining to it, which will retain its form after the mould is brought to rest. A simple formula expresses the relationship between the centrifugal force in pounds (F), the velocity of the particle in feet per second (v), the radius of the circle in which the particle revolves in feet (R), the weight of the particle in pounds (W), and the acceleration due to gravity (g):—

$$F = \frac{Wv^2}{gR}$$

The mould is rotating slowly ($F=2$) during the filling of the concrete, which distributes itself evenly inside the mould. Increase in speed of the mould, however, causes the heavier particles to move outwards, and there is a limiting velocity of a mixture of large and small particles settling together. This velocity is arrived at experimentally. It would appear that during the rotation of the mould at high speeds the larger and heavier pieces of the aggregate move towards the outside until they are packed as closely as possible. The sand follows more slowly and fills the interstices, and the cement finally fills up between the particles of sand.

The author then illustrated (with the aid of slides) the methods for testing the strengths of various spun pipes, and the relationship between the spinning speed and strength of the resulting concrete.

Points in the Discussion

Mr. Droop Richmond inquired if the purpose of the aggregate was to produce a hard outside surface.

Mr. Burford asked if during the chemical change which occurred during the setting of the concrete would give rise to expansion.

Mr. Gray asked if there were any figures which showed the relationship in bursting strengths of "spun" and ordinary concrete pipes.

Mr. Ward, in reply, stated that although a granite aggregate gave a hard outer surface, a still harder product resulted without its use. The main object of the granite was to save cement, by its filling interstices, and the most economical concrete was one containing the highest quantity of aggregate. There was a limit as to the amount which could be used, and this limit was small in the manufacture of a thin pipe. With reference to the expansion due to heat generated by the chemical change on setting there would only be a few degrees difference in temperature, and this would be immaterial as the steel mould and concrete expand about the same amount. No figures were available as regards the bursting strengths of "spun" and ordinary pipes, but the former were certainly stronger as far as external stresses were concerned.

Extinguishing an Oil Fire

"FOAMITE" FIREFOAM was recently successfully used to extinguish a fire in a Californian oil field which resulted from an explosion of a storage tank 54 ft. in diameter and 25 ft. high. At the time of the explosion oil was being pumped into the tank. The explosion broke the overhead filling connection, resulting in about 50 barrels of oil being spilled inside the fire wall before the oil pumps could be shut down. The explosion ignited the oil outside the tank as well as in the tank proper. The "Foamite" System was put into operation without delay, and eight minutes after the explosion the fire was under control. Although the fire was under control in about eight minutes solutions were pumped on to the fire through the mixing chamber and hose streams for an additional five minutes. It is interesting to note that though the roof was blown off by the explosion the "Foamite" installation remained intact and was immediately available.

Brown Sulphate of Ammonia

Heavy Claim by Hong Kong Buyers against Exporter

FREDERICK GRIFFIN (trading as F. Griffin and Co.), merchant, 34, Great St. Helens, London, who had been engaged in considerable contracts in sulphate of ammonia, attended before Mr. Registrar Francke for his public examination at the London Bankruptcy Court on Friday, March 7. His statement of affairs showed liabilities £61,810, of which £23,733 were expected to rank for dividend, and assets estimated to realise a net amount of £3,948. The debtor, in reply to the Official Receiver, said that he began business at the above address in August, 1919, having previously carried on business abroad as an export and import merchant. The business was, however, not a success owing to the depreciation of foreign exchanges and to depression in trade and he eventually filed his petition. Other causes of his failure were lack of capital and liability on guarantees in respect of which he received no consideration.

The debtor was examined with regard to the claim of H. Castro and Co., Ltd., of Kong Hong. He said that in the latter part of 1922 he entered into a contract to supply that company with 210 tons of brown sulphate of ammonia, shipment to be made to Hong Kong. He shipped as per shipping sample, but they refused to accept delivery on the ground that the sulphate was not up to sample. He then asked them to forward sealed samples, which were submitted to the manufacturers and suppliers, and it was his contention that on examination they proved to be identical with the shipping samples. Both the manufacturers and suppliers repudiated liability and he also did. In 1922 he entered into a further contract to supply H. Castro and Co., Ltd., with 300 tons of sulphate of ammonia. He despatched the goods in due course and they received them. It was his contention that they had plenty of time between the despatch and receipt to have sold them without loss; indeed, they would have made a profit, but they took a view of the local market which in his opinion was speculative, with the result that they delayed selling and the market went against them. He was aware that Castro and Co., Ltd., were now making a heavy claim against his estate, but it was his contention that if they had sold the sulphate of ammonia at the proper time and taken no risk there would have been no claim; and he did not admit that any valid claim could be made against his estate. He himself was making a profit of about £1 a ton on the transaction.

The Official Receiver informed the Court that Castro had lodged a proof of debt for £3,000 against the debtor's estate.

Examined by the representative of Castro he denied that they had submitted any proof of loss. He knew nothing about this claim of £3,000 until the news was cabled to Castro that he had failed, when they cabled back a claim against the estate for £3,000. He was aware that it was stipulated that the colour of the sulphate of ammonia should be brown, but this colour was merely a recent fad. In his opinion the fundamental matter that counted was the chemical analysis. Castro ordered brown, he bought brown and he sold brown. The suppliers did not invoice brown to him, the reason being that he bought brown without guarantee and sold to Castro as brown also without guarantee. He was certainly unaware that the suppliers to him had repudiated the colour.

The examination was adjourned in order that counsel appearing on behalf of the trustee in bankruptcy might have an opportunity of examining the debtor.

Chemical Agent's Discharge

MR. JOHN MACDONALD-MOORE, late of 31-33, High Holborn, W.C., who formerly carried on business as a chemical agent, was adjudged a bankrupt on July 31, and his affairs came before Mr. Registrar Francke at the London Bankruptcy Court on Friday, March 14, on the hearing of his application for an order of discharge. The Official Receiver estimated the total unsecured indebtedness at £5,544, and said that the estate had realised £92. In 1906 the debtor obtained employment with a firm of chemical manufacturers, and from 1907 until 1915 acted as their representative in India.

The only fact reported by the Official Receiver was the insufficiency of the debtor's assets to pay 10s. in the £ on the amount of his unsecured liabilities, and the Registrar in these circumstances decided to suspend the discharge for only four weeks.

Magadi Soda Co., Ltd.

Winding-up Petition Again Adjourned

THE petition of the Controller of the Clearing Office for a compulsory order to wind up the Magadi Soda Co., Ltd., again came before Mr. Justice Eve in the Companies Winding-up Court on Tuesday.

Mr. Simmonds, for the petitioner, said there were very large interests involved in this case. The petition had stood over in order that his Lordship might be satisfied that there was a valid resolution for voluntary winding-up and also that a real attempt was being made to come to some arrangement. Evidence had been put in that the resolution for voluntary winding-up was quite valid, and there was also a considerable body of evidence as to negotiations that had taken place not only with certain persons who were apparently prepared on certain terms to come forward with money, but also with the authorities of the Colonial Office, upon whose goodwill depended the possible re-establishment or continuance of the business of the company in Kenya Colony. He did not think he would be justified in pressing that day for an order for compulsory winding-up. The possibility of the petitioning creditor or the other unsecured creditors obtaining anything in respect of their debts depended upon some scheme being put forward.

Mr. Roope Reeve, K.C., for the company, said the proposed scheme was a genuine one. A scheme was prepared prior to the presentation of this petition and would have gone on but for the fact that a better scheme was put forward by trade competitors or persons interested. The whole substratum of the company was a lease of soda deposits in Kenya Colony, and that was held from the Crown Agents and was dependent on the goodwill of the Colonial Office. The lease had become determinable, and the negotiations now going on with the persons interested were taking place in collaboration with the Colonial Office. The whole difficulty was that they could not hustle a department like the Colonial Office. He asked that the petition should stand over for a month.

Mr. Pennell, who said he was a very large shareholder and a debenture holder, and was the head of what was called the discontented shareholders, complained that so far everything had been carried on behind his back and the backs of the other shareholders and debenture holders.

Mr. Bennett, K.C., for the receiver in a debenture holders' action, said an application had been made in that action by the Colonial Office that if a compulsory order were made they would exercise their rights and forfeit the concessions.

His Lordship said he would resent such an attitude as that.

Mr. Dighton Pollock, for the Crown Colonies, said that statement was not accurate. They had taken steps to forfeit, but they were holding their hand pending a reconstruction of the company.

Mr. Spens said he represented the National Bank of India, who were unsecured creditors for over £70,000, and their manager had filed an affidavit in which he stated that a voluntary winding-up was part of the arrangement under which the Crown Agents were at present holding their hands.

His Lordship granted an adjournment for three weeks, and directed the voluntary liquidator to give Mr. Pennell all the information he reasonably required.

Chemist Not Guilty of Embezzlement

MR. CHARLES HERMAN PRETTY, chemical salesman, was found not guilty at the Glamorgan Assizes on Wednesday, March 12, on a charge of alleged embezzlement. The accused was employed by W. A. Wharran, Ltd., of Leeds, and part of his work was the collection of cheques from customers. He used to pay these into his account and the balance between the total and his salary and expenses was adjusted weekly. He was charged with failing to notify certain sums to his employers. The defence was that owing to illness his memory had been affected and he had forgotten about the receipt of the cheques. It was stated that he had been dismissed from his employment, and had set up business as a pharmacist in Cardiff. In directing the jury, his Lordship (Mr. Justice Branson) said that there was very little law in the case—the jury had to decide a question of fact. Did Pretty forget to notify his employers of the receipt of the moneys? After a short retirement the jury returned a verdict of not guilty and prisoner was discharged.

The Affairs of Organam, Ltd.

A MEETING of the creditors of Organam, Ltd., Capel House, Old Broad Street, London, and works at Yiewsley, Middlesex, fertiliser manufacturers, was held on March 13. The chair was occupied by Mr. F. Sharman, liquidator in the voluntary liquidation of the company, who said that the balance sheet showed bank overdraft £1,819, first debentures £2,000, second debentures £500, sundry cash loans £3,751, and sundry creditors £6,651. The book value of the assets was £6,925, but they would not fetch anything like that amount. The company was incorporated on April 5, 1922, as the Elstree Chemical Works (1922), Ltd., the nominal capital being £20,000. The company purchased a business for £16,000. The issued capital to date was £16,712. The name of the company was changed to Organam, Ltd., in July, 1922.

A Creditor: Is there any chance of the business being sold as a going concern?

Mr. Sharman said that he was trying to do that at the present time.

A resolution was passed confirming the voluntary liquidation of the company, with Mr. Sharman as liquidator.

Liquidation of British Potash Company, Ltd.

AT the offices of the Board of Trade, Carey Street, London, on March 14, statutory meetings of the creditors and shareholders were held in the liquidation of the British Potash Co., Ltd., 49, Queen Victoria Street, E.C., against which a winding-up order was made on February 5 on the petition of the Attorney-General. Mr. E. T. A. Phillips, Official Receiver, presided.

The company was incorporated in March, 1917, and the nominal capital was originally £50,000, but by special resolution it was increased to £100,000. The objects of the company were to carry on the business of manufacturers and producers and dealers in potash, soda, and other alkalis, and manufacturers of and dealers in chemicals and fertilisers. The statement of affairs filed showed as regards creditors ranking liabilities £129,813 and net assets £14,304. The paid-up capital was £100,000, and there was a total deficiency as regards shareholders of £215,508.

The liquidation remained in the hands of the Official Receiver.

"Inecto" Director Found Not Guilty

ON Wednesday, after a trial at the Old Bailey lasting a week, Mr. Noel Blake Ducker, 27, a company director, charged with having conspired with his brother Philip, not in custody, to defraud the Revenue of income-tax and Excess Profits Duty in connection with Inecto, Ltd., was found not guilty. Sir Edward Marshall-Hall, K.C., in his speech for the defence, submitted that at the time of the alleged fraud Philip Ducker was running the company, and the defendant was at the factory and knew nothing whatever of the business side of the firm. Philip Ducker, by sheer bluff and advertisement, made the sale of Inecto Hair Dye a great success. Philip was the "king of bluff," who had succeeded in an elaborate scheme for defrauding the Revenue. Defendant had not got a farthing benefit from the frauds, and counsel submitted that there was not a tittle of evidence that he took part in any conspiracy.

Summing up, Mr. Justice Swift said it was not the fault of anyone in this country that Philip Ducker was not brought to justice.

The jury found defendant not guilty on all counts in the indictment.

Judgment Against Dye Company's Directors

AFTER hearing legal arguments Mr. Justice Horridge gave judgment in the King's Bench Division on Monday for the Midland Bank in their claim against the executors of the late Earl of Shrewsbury and Sir Henry Busby Bird, of Stoke Newington, on a guarantee for £25,000 given by Lord Shrewsbury and Sir Henry Bird in 1920. The guarantee was to secure the bank overdraft of the Aniline Dye and Chemical Co., of which they were directors.

Chemical Matters in Parliament

The Dyestuffs Agreement

Mr. Turner (House of Commons, March 18) asked the President of the Board of Trade if the negotiations between the British Dyestuffs Corporation and the Interessen-Gemeinschaft, Germany, were still continuing, or whether a complete draft agreement had yet been submitted to the Board of Trade; and would he give an undertaking that no agreement should be concluded before the House of Commons had been given an opportunity to discuss the same; and also whether he was taking steps to secure that in any proposed agreement between the British Dyestuffs Corporation and the German combine nothing detrimental to the makers of aniline dyes in Great Britain was permitted within such agreement.

Mr. Webb: I understand that negotiations between the British Dyestuffs Corporation and the Interessen-Gemeinschaft are still proceeding and no draft agreement has as yet been submitted to the Board of Trade. If and when an agreement is submitted all relevant considerations will be taken into account in examining it; and, as I informed my hon. friend on February 15, I will consider the question of making a statement to the House.

Poison Gases

Answering a question by Mr. Broad (House of Commons, March 18) on poisonous gas, Mr. Walsh, Secretary of State for War, said that the expenditure in the current financial year was about £80,000 and a similar sum had been provided for 1924-25. The animals experimented upon were cats, guinea pigs, goats, mice, monkeys, rabbits and rats. The total numbers used from April 1, 1923, to the present date was 689, out of which 618 animals had been killed or destroyed. H.M. Government were signatories to the Washington Resolution of 1922, which condemned the use in war of asphyxiating and poisonous gas, but this Resolution had not yet been ratified by all the signatory powers, and in view of such facts as those just given they were doing all in their power to render the Resolution effective.

Organisation of a Chemical Factory

AN interesting paper on "Factory Maintenance" was given to a joint meeting of the Derby and Nottingham Societies of Engineers at Derby on Monday by Mr. C. H. Jessop, chief engineer of Boots Pure Drug Co., Ltd. He dealt fully with the methods employed at Messrs. Boots factory, speaking of the production of steam, power, light, water, compressed air and refrigeration. He said supplies were worked out by a system of costing, and the cost charged to the different departments. Record cards were kept for each item of plant, and on these were given the original price and the value at the end of each year. These cards were used for inspection purposes. A staff of fitters was kept, and when work was done an estimate of the cost was got out. Cards were also used for the electrical apparatus at the factory.

The chairman (Mr. H. T. H. Edgecombe) mentioned that the societies would visit Messrs. Boots works at Nottingham on March 26.

Use of Natural Soda in India

IN the annual report of the Department of Industries at Bombay for 1922–23, it is stated that investigations were made on the conditions required for successful working of the Dhands in Sind, which are shallow lakes in which water concentrates during the dry season, where Chaniho (crude carbonate of soda) can be collected just before the rains. It appeared that the liquor in the Dhands should not be allowed to evaporate to a specific gravity above 1·28, and that the deeper the liquor in the Dhands, the more likely that the proper concentration could be preserved during the period of working. A sample of trona was sent to the Chairman of the Glass Committee of the Institute of Chemistry, and he reported that the trona was suitable for window glass, bottle glass or glass of any ordinary kind, but not for lead glass or other fine type. It is suitable for the type of glass at present manufactured in India, but it would be unwise to press the claim of this trona on local glass manufacturers unless a regular supply of a uniform quality was assured.

From Week to Week

DR. LEONARD DOBBIN has been appointed Reader in Chemistry at Edinburgh University.

THE AMERICAN INSTITUTE OF CHEMISTRY has drawn up a proposal for a standard contract for the engagement of professional chemists.

MR. R. F. GOSS has received the degree of Ph.D. in Science and Mr. E. H. Farmer the degree of D.Sc. in Chemistry in the University of London.

ACCIDENTAL IGNITION of a chemical mixture caused an explosion on Saturday at a match factory near Turin resulting in the death of 23 persons.

A TALK was broadcast from London and all broadcasting stations on Monday by Sir William Bragg, F.R.S., on "The Atoms of which Things are Made."

THE DEATH OF Mr. John M. Murray, director of the United Turkey Red Co., Ltd., occurred at his residence in Glasgow, on Tuesday. He was in his 78th year.

MR. W. J. U. WOOLCOCK has written a survey of the British chemical industry which appears in the annual trade review just issued by the Federation of British Industries, entitled "British Industry, 1924."

THE FRIDAY EVENING DISCOURSE at the Royal Institution, London, on Friday, March 28, will be delivered by Dr. Hugh Maclean on "Insulin," and on April 4 by Sir Ernest Rutherford on "The Nucleus of the Atom."

SIR HARRY VERNON KILVERT, of Ashton-on-Mersey, died on Wednesday, March 12, at the age of 62. He was the first chairman of the Dyestuff Commission set up in February, 1921, to advise the Board of Trade.

WHEN A GANG of men were removing slag from a furnace at a steel works at Llanelly on Monday, a quantity of gas escaped, and on coming in contact with the molten slag exploded, causing injuries to one of the men.

A NEW CATALYST for use with synthetic ammonia production has been developed in the U.S.A. by Professor A. B. Lamb, of Harvard. This is claimed to increase the yield by nearly double, and to be particularly free from deterioration.

THE COUNCIL OF THE BRITISH ASSOCIATION has resolved to nominate Dr. Horace Lamb, F.R.S., formerly Professor of Mathematics in the University of Manchester, as President of the Association for the Southampton meeting in 1925.

THE FIFTH CONGRESS of the International Union of Pure and Applied Chemistry will be held at Copenhagen from June 26 to July 1. The Fourth Congress of Industrial Chemistry under the auspices of the Société de Chimie Industrielle will be held at Bordeaux, France, June 15 to 20.

THE COMMENDABLE HABIT of distributing advertising desk blotters is on the increase. Among the latest we have received is one from Brittain's Electric Motor Co., of 110, Cannon Street, London, E.C.4, illustrating four types of electric motor on the front, with a convenient blotter on the reverse side.

THE NUMBER OF PERSONS on March 10, 1924, recorded on the registers of employment exchanges in Great Britain was 1,113,600. This was 21,142 less than on March 3, 1924, and 172,023 less than on December 31, 1923. The total included 822,700 men, 34,400 boys, 222,400 women, and 34,100 girls.

THE FIRST of a series of lectures on "The Life and Work of Sir Joseph Wilson Swan" took place in Sunderland on Saturday, March 15. The lecturer was Mr. Kenneth R. Swan, B.A., of London, son of the late Sir Joseph, who dealt with some of his father's early inventions, including the rapid photographic dry plate and the incandescent electric lamp.

MEMBERS OF THE West Yorkshire Metallurgical Society visited Bradford on Saturday, March 15, and during the afternoon were shown round the works of the English Electrical Co., Ltd., at Thornbury. In the evening a meeting was held in the Market Tavern, when papers were read on the methods of analysis of alloys and gases. Mr. H. R. Pitt, of Wakefield, presided.

SIX MEN were seriously gassed and eight others slightly in a mishap at the works of the Shelton Iron, Steel and Coal Co., Stoke-on-Trent, on Friday, March 14. The men were unloading old war store metal, and threw a cylinder out of the truck. Unknown to anyone the cylinder contained poison gas and apparently the concussion opened the valve. The men are stated to be making satisfactory progress.

THE UNITED STATES GOVERNMENT has appealed against the decision of the United States District Court which was given against them recently in its suit for the return of numerous German dye patents by the Chemical Foundation, Inc. Seventeen allegations of error are made in the appeal, which is general rather than specific, and concludes: "The Court erred in each and every one of its conclusions of law and fact."

A FIRE BROKE OUT on Monday, March 10, in the chemists' department of the Dunfermline Co-operative Society. It is believed that the fire was caused by the fusing of an electric wire in the roof of the building. The building, which was packed with stores, including chemicals and spirits, many of them being of a highly inflammable nature, was gutted, the stock being completely destroyed. The damage is estimated at £2,000.

THE DEATH TOOK PLACE at Swanland Manor on Tuesday of Sir James Reckitt, Bart., head of the firm of Reckitt and Sons, blue manufacturers, at the age of 91 years. When he joined his father in the business the concern was of modest pretentions, but it grew quickly under Sir James' direction. He proved to be a most generous benefactor to public work in Hull, and was interested in the establishment of a garden village at East Hull.

DR. JAMES KENNER, Senior Lecturer in Chemistry at Sheffield University, has been appointed Professor of Organic Chemistry at the University of Sydney. Dr. Kenner during the war was in charge of the gas station at Calais, and was responsible for the greater part of the phosgene gas used by the British Army in France. He has been at Sheffield University for 14 years, and has carried out researches in various fields of organic chemistry. He was educated at the University of London and at Heidelberg.

THE ANNUAL GENERAL MEETING of the Bristol and South Western Counties' section of the Institute of Chemistry was held at Bristol on Saturday, March 15. Various important matters were considered, and a scheme of co-operation with the Bristol section of the Society of Chemical Industry, whereby joint meetings will be held next season, was approved. The following officers were elected for the ensuing year:—Chairman, Mr. C. J. Waterfall; committee, Dr. D. Hooper, Dr. E. Vanstone, Messrs. F. Southerden, W. A. Storey, and R. P. Littler; hon. secretary and treasurer, Mr. A. W. M. Wintle; auditors, Messrs. E. Lewis and F. H. C. Bull.

A New Barrel-Scrubbing Device

IF it be true (a correspondent writes) that business firms of to-day are really intent upon economy and labour saving, then the makers of an effective barrel-scrubbing machine should have little cause to regret the time and labour spent in perfecting their machine. With barrels which have been used for chemicals or oil there are only two courses—either they must be cleaned so as to fit them for further use or they must be broken up. Economy lies in the former course if it can be effected cheaply and satisfactorily. This, it is claimed, is possible by means of a machine known as Hall's barrel-washing machine, now being shown by Fairburn and Hall, of Palace Works, Wood Street, Stockport.

It is a simple and inexpensive plant working over a tank, above which is mounted a frame carrying strong brass wire brushes, with hot water and steam jets to play on the inside as the barrel revolves round the brushes. It is simple in construction, the open-ended barrel being tilted on to a frame with the brushes and steam and water jets inside the barrel. The brushes are arranged to press against the sides and closed end, while a pulley gear revolves the barrel, now partly submerged in the tank, which contains hot water and soda ash if necessary. One hand lever controls the brushes, which are long enough for any barrel of the usual 40 gallon capacity or according to requirements. About 15 to 30 barrels per hour can easily be operated by one man, and no expensive fitting is required. In fact, about £75 will pay for the whole plant.

Where the barrels are not open and only the outside needs cleaning, the machine is adapted for this purpose, and oil barrels are cleaned up fit to take paint or varnish and be ready for new work. A sample machine is on view at the works of Fairburn and Hall, at Wood Street, Stockport, and any firms handling empty barrels would find the system at least worth investigation.

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Investigation of the system cyclohexane-aniline. E. H. Buchner and D. Kleyn. *Rec. Trav. Chim. des Pays-Bas*, February 15, 1924, pp. 153–157.

REACTIONS.—The action of ammonia on organic halogen compounds at high temperature. J. Heslinga. *Rec. Trav. Chim. des Pays-Bas*, February 15, 1924, pp. 178–180.

ANALYSIS.—The colorimetric estimation of hydrogen ion concentration by the wedge method and the dissociation constants of different indicators. I. M. Kolthoff. *Rec. Trav. Chim. des Pays-Bas*, February 15, 1924, pp. 144–152.

Patent Literature

Abstracts of Complete Specifications

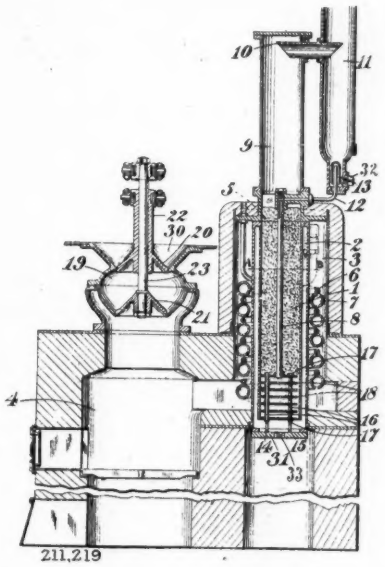
211,178. DYEING. Plauson's (Parent Co.), 17, Waterloo Place, Pall Mall, London, S.W.1. From H. Plauson, 26, Jarrestrasse, Hamburg, Germany. Application dates, September 13 and October 27, 1922.

The object is to increase the range of materials for use in dyeing by enabling insoluble materials to be used. Pigments which may be wholly or partly inorganic are converted into a very fine colloidal dispersion in a non-solvent, the dispersion is used as a dye-bath, and the colloidal particles are coagulated on the fibre. The colloidal suspension must be sufficiently fine to show a definite Brownian movement, and under these conditions the particles will penetrate the pores of the fibres. It is also necessary to effect a fixation of the colloidal particles by coagulation, which may be obtained by various means. The fixation depends on a different polarity or intensity of charge between the fibre and the colloidal pigment. The charge may be determined by known methods, such as kataphoresis. The colloidal suspension may be produced in a colloid mill such as that described in Patent Specification No. 155,836 (see THE CHEMICAL AGE, Vol. IV., p. 313). The dye-bath may be mixed with a slow or diluted coagulant—*i.e.*, a coagulant whose action is deferred for sufficient time to allow the dyeing to be effected. Most electrolytes are coagulants, particularly divalent and trivalent metal compounds; also some organic compounds such as halogen compounds of amines, and other compounds containing halogens, sulphur, nitrogen, etc., especially sulphonic acids. The coagulation is irreversible, and the coagulated pigment cannot then be removed by washing with hot water, acids, or alkalies. Coagulation may also be effected by heat, ultra-violet light, electrical means, or by adding colloids having a different intensity of charge.

This process renders it possible to use mineral colours such as graphite, carbon black, lamp black, ochre, umber, iron oxide, cinnabar, antimony sulphide, ultramarine, and cobalt oxide. In an example, lamp black and vegetable charcoal are disintegrated with an accelerator such as sulphite cellulose liquor until the particles are less than 0·0001 mm. Other dispersators, such as iron tannate or gallate, extract of logwood, etc., which are coloured, may be used, and the dye-baths thus obtained may contain 0·2 per cent. or more of carbon. The coagulant may be an equal volume of a $\frac{1}{10}$th normal solution of alum. Cotton may be dyed in this bath by heating for about 1½ hours, and may then be subjected to any known finishing process. Other examples are given of the dyeing of cotton, animal fibres, cellulose acetate silk, paper, leather, etc. These dye baths may be concentrated and preserved by evaporation in the presence of a large proportion of protective colloid but little electrolyte.

211,219. RETORTS OR STILLS. F. Lamplough, Highfield, Feltham, Middlesex, and N. C. T. Harper, 571, Essenwood Road, Durban, Natal, South Africa. Application date, November 14, 1922.

This retort is for refining and fractionating mineral oils. A retort 1 is provided with two concentric jackets 2, 3, the latter of which is connected at the bottom to a furnace 4 and at the top to an exhaust flue 5. Two pipe coils 6, 7 of different diameters are arranged in the jacket 3, and the smaller pipe 6 is connected to a water supply at the top and to the pipe 7 at the bottom. The retort 1 is packed with graphite, and communicates at the top with the chamber 9 and separator 11. The graphite rests on the uppermost of a series of plates 18, spaced apart and mounted on rods 16. The jacket 2 and retort 1 communicate at the bottom through perforations in the plates 18. The lower end of the separator 11 is provided with a siphon 13, and discharge pipe 12 which returns the condensate through a conduit 8 in the retort to the uppermost of the plates 18. Fuel is supplied to the furnace 4 through a hopper 19, controlled by balanced valves 20, 21. Oil to be treated is supplied by the pipe 32, from which it passes to the plates 18. Water in the pipe 6 is vaporised by the furnace gases, and is superheated in the pipe 7. The steam is further superheated in passing downwards through the jacket 2, and then distils the oil passing downwards over the plates 18. The products pass upwards through the graphite into the chambers 9, 11, and the heavier condensate passes from the latter through the pipe 12 back to the retort. The jacketing of the retort ensures its uniform heating.



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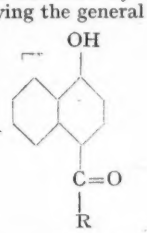
211,223. NEW AZO-DYESTUFFS, MANUFACTURE OF. O. Y. Imray, London. From Soc. of Chemical Industry in Basle, Switzerland. Application date, November 15, 1922.

These dyestuffs are obtained by coupling a derivative of 1-oxynaphthalene having the general formula :—



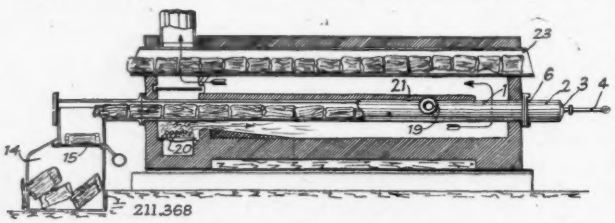
where R represents an aryl residue or an -NH-aryl residue with a diazo compound. Examples of these derivatives are 4 : 4′-dioxynaphthyl-ketone-3 : 3′-dicarboxylic acid, which is obtained as described in Specification No. 195,513 (see THE CHEMICAL AGE, Vol. VIII., p. 493); 4 : 4′-dioxydinaphthyl-ketone which is obtained as described in Specification No. 181,009 (see THE CHEMICAL AGE, Vol. VII., p. 213); the arylides of 1-oxynaphthalene-4-carboxylic acid, which can be obtained by the action of an aromatic amine on one of the ethereal salts of 1-oxynaphthalene-4-carboxylic acid mentioned in Specification No. 181,009 (see above) or a 4-oxynaphthalene-1-arylketone or a carboxylic acid derivative obtained as described in Specification No. 203,824 (see THE CHEMICAL AGE, Vol. IX., p. 431). Acid dyestuffs, dyestuffs suitable for the production of pigments and lakes, or dyestuffs formed on the fibre, are obtained according to the nature of the diazo compound used. Examples are given of the coupling of diazotised 1-methoxy-2-aminobenzene-4-sulphonic acid and 4 : 4′-dioxydinaphthyl-ketone-3 : 3′-dicarboxylic acid; diazotised metanilic acid and 4-oxynaphthalene-1-phenyl-ketone-3-carboxylic acid; 4-oxynaphthalene-1-(2′-chloro)-phenylketone-3-carboxylic acid and diazotised phenyl ether of 4-chloro-2-amino-1-phenol; and also examples of dyestuffs produced on the fibre.

211,234. Sulphurised Dyes from Carbazole-derived Indophenols, Manufacture of. W. Lewcock and W. A. Voss, of The Gas Light and Coke Co., Beckton, London, E.16, and The Gas Light and Coke Co., Horseferry Road, Westminster, London, S.W.1. Application date, November 18, 1922.

Carbazole-derived indophenol is heated in an alcoholic medium with a thionating reagent such as a highly sulphurised alkaline polysulphide, under pressure to prevent ebullition. The polysulphide may be obtained by heating hydrated monosulphide with flowers of sulphur, and then adding to a mixture of flowers of sulphur and ethyl alcohol. Dry carbazole-derived indophenol prepared as described in Specification No. 201,624 (see The Chemical Age, Vol. IX., p. 264) is then added, and the mixture heated in an autoclave to 95°-100° C. for 36 hours. The mixture is cooled, diluted with water, the alcohol distilled off, and the dyestuff precipitated with hydrochloric acid. Similar results are obtained by the use of methyl, propyl, and butyl alcohols. The thionation should be conducted in a glass vessel, or a vessel having a vitrified enamel surface, since these dyestuffs are affected by contact with metal.

211,368. Continuous Distillation of Wood, Process for. K. Reitmayer, Alserbachstrasse 26, Vienna 9, Austria, and G. Brunner, Akt.-Ges., m.b.H. Dreihufeisengasse 9, Vienna 6, Austria. Application date, April 6, 1923.

Wood is distilled by continuous passage through a narrow horizontal retort, thus avoiding the delay due to recharging of muffle furnaces at intervals, and the slow heating of the charge in such furnaces. The horizontal retort 1 is provided with a charging device 2 at one end, and has a cover 3 at its



211,368

outer end. The wood is distilled in large blocks which are placed in the tube 2 and transferred to the retort 1 by means of a push rod 4. The tube 2 is carried by a sliding plate 6, so that it may be placed in communication with the retort 1 or may be moved laterally so as to be in communication with the atmosphere. The blocks in the retort 1 are moved forward each time a new block is added, and a block of charcoal is discharged at the other end to a container 14, which is shut off from the retort by a flap 15. The products of distillation are drawn off through several lateral outlets such as 19. The retort is heated by a furnace 20 having a return flue 21 which heats a drying tube 23 to a temperature of about 150° C. A uniform process and products are obtained by the use of this apparatus.

211,409. Rotary Washers and Scrubbers for Use in the Manufacture of Gas and the Like. The Gas Light and Coke Co., Horseferry Road, London, S.W.1, and T. J. Noden, 89, Kennington Park Road, London, S.E.11. Application date, July 16, 1923.

These rotary scrubbers are for the purification of gas and the absorption of ammonia, naphthalene, cyanogen, and benzol. The scrubber is of the kind in which a series of revolving bundles or porous screens are mounted on a horizontal shaft in a casing. Instead of half filling the casing with the washing liquid, a small quantity only is used, which is just reached by the lower part of the periphery of the rotating elements. These elements carry buckets which pick up the solvent at the lower part of the travel and distribute it over the absorbing surfaces when near the top of their travel. A larger wetted area is thus available for the absorption of the gas. The increase in wetted area is about 80 per cent. compared with the usual apparatus of this type.

Note.—Abstracts of the following specifications, which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention: 189,132 (T. Goldschmidt Akt.-Ges.) relating to a process for the production of amorphous, finely subdivided litharge, see Vol. VIII., p. 103; 200,839 (Naamlooze Vennootschap Algemeene Norit Maatschappij) relating to the treatment of liquids with purifying and decolorising agents, see Vol. IX., p. 320; 207.142 (Henkel et Cie and W. Weber) relating to the treatment of ammonium chloride lye in iron vessels, see Vol. X., p. 101.

International Specifications not yet Accepted

209,757. Zinc Sulphide. Soc. Anon. Compagnie Générale des Produits Chimiques de Louvres, Louvres, Seine-et-Oise, France. International Convention date, January 11, 1923.

Zinc sulphate is heated in a closed oven to 250° C. or more, and sulphuretted hydrogen, with or without sulphur dioxide, is passed over it. Zinc sulphide in an amorphous, semi-crystalline, or crystalline condition, sulphur dioxide, and sulphur are obtained. The sulphur dioxide may be converted into suphuric acid, and this may be caused to react with sodium suphide to obtain the suphuretted hydrogen required. The sodium sulphate is heated with carbon to recover sodium sulphide.

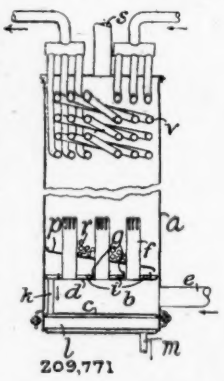
209,767–8. Organic Mercury Compounds. A. Albert, 46, Elisabethstrasse, Munich, Germany. International Convention date, January 12, 1923.

209,767. These compounds are obtained by mercurising the condensation products from amido compounds, or hydrazine or its derivatives, and mixed aliphatic-cyclic compounds containing carbonyl groups not in cyclic combination. In an example, the semi-carbazone of *p*-acetophenone arsinic or carboxylic acid is dissolved in caustic soda and mercuric oxide added.

209,768. The mercurised products described in 209,767 above are "amidised" by condensing with hydrazine or its derivatives or with other reactive amido compounds. Examples are given in which mercuric oxide reacts with semi-carbazones of *p*-acetophenone arsinic acid, oxyacetophenone arsinic acid, acetophenone-carbonylic acid, *p*-amidoacetophenone.

209,771. Distilling Mineral Oils. K. Fuchs Orsova, Roumania. International Convention date, January 13, 1923.

A dephlegmator for the fractional condensation of mineral oil vapour comprises a vertical casing *a* to which the vapour is admitted by a pipe *e*. The vapour passes from a chamber *b* upwards through tubes *f* which are slotted at their upper ends and covered by perforated caps. The vapour then passes over a cooled pipe coil *v* to the outlet *s*. The condensate passes over an inclined plate *p* carrying packing *r*, and then over a plate *b* having baffles *g* on its surface. The condensate then passes to a chamber *l* and outlet *m*; steam may be injected into it through a perforated pipe *i*.



209,771

210,073. Dyes and Disinfectants. Haoo Co., Ltd., 4, Schanzenstrasse, Berne, Switzerland. Assignees of Haco-Ges., Berne, Switzerland. International Convention date, January 20, 1923.

Dyestuffs such as sulphonic acids of oxyanthraquinones, oxynaphthoquinones, or gallocyanines are treated with bismuth hydroxide or bismuth salts. The products dye wool or tannined cotton and are disinfectants. In an example, the sodium salt of alizarin monosulphonic acid is treated with bismuth hydroxide or bismuth subnitrate.

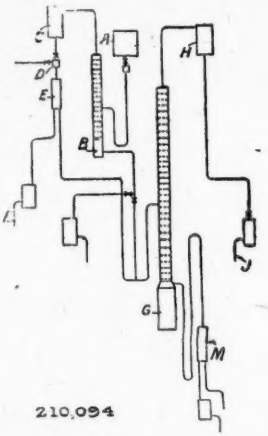
210,081. Dyes and Lakes. Farbwerke vorm. Meister, Lucius and Brüning, Hoechst-on-Main, Germany. International Convention date, January 18, 1923.

Azo dyes are obtained from diazotised alkyl-, aryl-, or aralkyl-amides of an alkyloxy-*m*-amidobenzoic acid and arylamides of 2 : 3-oxynaphthoic acid. In an example, diazotised-*m*-amido-*p*-methoxybenzoic anilide is coupled with 2 : 3-oxynaphthoic-*o*-toluidide or with the 5-chlor-2-toluidide

in presence of barium sulphate. The dyes may be produced in substance, on the fibre, or in the form of lakes. The products are red and the process can be used for the production of alizarin pink shades.

210,094. Separating Mixtures of Benzol and Dilute Alcohol. Stinnes-Riebeck Montan-und Oelwerke Akt.-Ges., Halle-on-Saale, Germany. International Convention date, January 22, 1923.

The mixture is distilled till the boiling point commences to rise, the distillate is diluted with water to separate the benzol as an upper layer, and the aqueous alcohol is rectified. The residue may consist of dilute alcohol, of a mixture of benzol and strong alcohol, or of benzol and water, depending



210,094

on the proportion of benzol in the original mixture. The mixture passes from a vessel A to a column B, and the vapour to a condenser C. Water is added in a mixer D, and the benzol separated in a vessel E. The alcohol passes to a column G, from which the vapour passes to a condenser H, and strong alcohol is drawn off at J. Benzene and water are drawn off at the base of the column G, and pass to a separator M.

210,095. Synthetic Drugs. Farbwerke vorm. Meister, Lucius and Brüning, Hoechst-on-Main, Germany. International Convention date, January 22, 1923.

Aromatic compounds having a side chain containing hydroxyl are treated with bismuth salts, or a group containing hydroxyl is introduced into an aromatic bismuth compound having no such side chain. In an example, 3-n-dioxypropylamino-4-oxybenzoic acid sodium salt is treated with bismuth nitrate in glacial acetic acid. The above-mentioned benzoate is obtained by treating 3-amino-4 oxybenzoic acid with sodium ethylate, and condensing with glycide.

Latest Notifications.

212,551. Centrifugal drying machines and the like. G. Grauss. March 8, 1923.

212,569. Manufacture of 4-oxynaphthalene-1-arylketones. Society of Chemical Industry in Basle. March 6, 1923.

Specifications Accepted, with Date of Application

188,651. Ammonia synthesis autoclave. Nitrogen Corporation. November 9, 1921.

190,131. Purification of gases. Koppers Co. December 8, 1921.

197,966. Colloidal solutions and reversible dried residues, Process for the production of. Oderberger Chemische Werke Akt.-Ges. May 19, 1922.

202,630, 202,632. Dyeing or printing textile fibres and other materials, Manufacture of products for. Durand and Huguenin Akt.-Ges. August 21, 1922. Additions to 186,057.

202,660. C.C.-disubstituted barbituric acids, Manufacture of new salts of. E. Layraud. December 31, 1921.

205,477. Ammonia, Synthetic production of. Norsk Hydro-Elektrisk Kvaelstofaktieselskab. October 12, 1922.

206,134. 3 : 10-Perylene quinone, Process of manufacturing. H. Pereira. October 28, 1922.

211,912. Dyeing. Plauson's (Parent Co.). (*H. Plauson.*) October 24, 1922.

211,946. Electrolisers. J. P. Scott. November 28, 1922.

212,029-30. Azo-dyestuffs, Manufacture of. A. G. Green, K. H. Saunders, C. H. Frank, and British Dyestuffs Corporation, Ltd. January 13 and 15, 1923.

212,034-5. Catalytic agents, Manufacture of. W. A. Patrick. January 17, 1923.

212,045. Metal sulphides, Process of making. H. Howard and E. B. Alvord. January 29, 1923.

212,053. Oil shale, bituminous coal, or the like, Low or medium temperature distillation of. T. R. Starkey. February 2, 1923.

212,065. Gels, Manufacture of. Silica Gel Corporation and W. A. Patrick. February 9, 1923.

212,144. Tanning materials, Manufacture and production of. J. Y. Johnson. (*Badische Anilin and Soda Fabrik.*) April 18, 1923.

212,145. Vat colouring matters, Manufacture and production of. J. Y. Johnson. (*Badische Anilin and Soda Fabrik.*) April 18, 1923.

212,171. Zirconium steel and process of making same. H. E. Potts. (*Electro-Metallurgical Co.*) May 29, 1923.

212,185. Argon, Production of—and the separation of the constituents of air. W. J. Mellersh-Jackson. (*L'Air Liquide Soc. Anon. pour l'Etude et l'Exploitation des Procédés G. Claude.*) July 23, 1923.

212,201. Purification of gases. Koppers Co. November 27, 1922. Addition to 190,131.

Applications for Patents

Bagley, C. H. F. Blast, etc., furnaces. 6,625. March 14.

British Xylonite Co., Ltd., and Simmons, W. H. Manufacture of casein products. 6,714. March 15.

Buchanan, A. Bleaching and dyeing kiers, &c. 6,576. March 14.

Carpmael, W. (Farbenfabriken vorm F. Bayer and Co.). Manufacture of dyestuffs. 6,241. March 11.

Carpmael, W. (Farbenfabriken vorm. F. Bayer and Co.). Manufacture of dyes. 6,507. March 13.

Cassella and Co., Ges., L., and Ransford, R. B. Manufacture of dyestuffs. 6,506. March 13.

Chemical and Metallurgical Corporation, Ltd., and Smith, S. C. Treatment of lead chloride, etc. 6,734, 6,735. March 15.

Compagnie Nationale de Matières Colorantes et de Produits Chimiques. Manufacture of black vat dyestuffs. 6,632. March 14. (France, March 16, 1923.)

Consolidated Mining and Smelting Co. of Canada, Ltd. Acid-proof structures for electrolytic, etc., operations. 6,310. March 12.

Edwards, K. B., Production of phenolic compounds from coal tar, etc. 6,352. March 12.

Edwards, K. B. Manufacture of polishes. 6,353. March 12.

Ellis, R. E., and Gamler, R. L. Process for reducing ores. 6,729. March 15.

Ellis, R. E., and Gamber, R. L. Means for reducing ores. 6,730. March 15.

Forwood, G. F., and Taplay, J. G. Treatment and production of hydrocarbons. 6,705. March 15.

Kahl, L., and Rutgerswerke Akt.-Ges. Manufacture of solid hydrocarbons from tars. 6,268. March 11. (Germany, September 11, 1923.)

Metal Traders, Ltd. Production of sulphuric acid. 6,404. March 12. (Germany, April 7, 1923.)

Naugatuck Chemical Co. Treating styrol, etc. 6,251. March 11. (United States, June 30, 1923.)

Price, W. P., Treatment of oils. 6,544. March 13.

Rhenania Verein Chemischer Fabriken Akt.-Ges., and Stuer, B. C. Manufacture of barium hydroxide or strontium hydroxide. 6,151. March 10.

Scottish Dyes, Ltd., and Thomas, J. Production of dyestuff intermediates. 6,091. March 10.

Scottish Dyes, Ltd., Thomas, J., and Woodcock, W. G. Manufacture of anthraquinone derivatives. 6,092. March 10.

Smith, T. B. Method of producing white commercial pure ammoniuu chloride. 6,618. March 14.

Sondermann, H. A., and Wadhams, W. H., Waithe, D., and Ziehm, A. Manufacture of colloid layers containing chromate colloids sensitive to light. 6,595. March 14.

Society of Chemical Industry: Newcastle Section

The annual meeting of the Newcastle section of the Society of Chemical Industry was held at Armstrong College on Wednesday, under the chairmanship of Mr. A. Trobridge, when the following officers were elected for the ensuing year :— Chairman, Professor W. N. Haworth ; vice-chairman, Professor H. V. A. Briscoe ; treasurer, Mr. A. Trobridge ; hon. sec., Mr. H. Dunford Smith ; Committee : Dr. P. E. Bowles, Dr. J. T. Dunn, Mr. D. W. Jones, Mr. Mordecai, Mr. F. H. Walker, Dr. W. Davidson, Mr. F. Hirsch, Professor H. Louis, Mr. A. Short and Dr. G. Weyman.

Mr. W. G. Carey, who was to have read a paper on "East Durham Waters for Boiler Purposes," was unable to do so through illness, and instead Professor Briscoe gave a talk on "Water Softness."

Market Report and Current Prices

Our Market Report and Current Prices are exclusive to THE CHEMICAL AGE, *and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.*

London, March 20, 1924.

BUSINESS during the past week has been of a fairly satisfactory volume, and is really without special feature.

The turnover on export account is rather poor and inquiry has dropped off.

General Chemicals

ACETONE is in good demand; price unchanged.

ACID ACETIC is very firm and in active demand.

ACID CITRIC is a firm market and higher prices are likely.

ACID FORMIC is very scarce for early delivery and much inquired for.

ACID LACTIC is in rather better supply, but the price is unchanged.

ACID OXALIC is unchanged.

ACID TARTARIC is again higher in price.

BARIUM CHLORIDE is uninteresting.

BLEACHING POWDER is unchanged.

FORMALDEHYDE is a very firm market and is expected to advance in sympathy with the raw material.

LEAD ACETATE is very scarce for early delivery. In forward positions the price is affected by the decline in the metal.

METHYL ALCOHOL is firm and advancing.

POTASSIUM CARBONATE AND CAUSTIC.—Unchanged.

POTASSIUM PERMANGANATE.—Weaker.

POTASSIUM PRUSSIATE.—Unchanged.

SODIUM ACETATE is very scarce; makers are sold out far ahead.

SODIUM BICHROMATE.—Unchanged.

SODIUM NITRATE is in good demand and the price is firm.

SODIUM PHOSPHATE.—Unchanged.

SODIUM PRUSSIATE.—A fair business is reported at recent figures, and any increase in export demand would quickly influence the market in an upward direction.

SODIUM SULPHIDE.—Unchanged.

Pharmaceutical Chemicals

ACETYL SALICYLIC ACID.—Irregular; the best Continental brands find a ready sale at makers' prices.

BARBITONE is cheaper.

BROMIDES are unchanged; ammonium continues in short supply.

CALCIUM LACTATE is easier.

COCAINE.—The undertone is firm; German manufacturers are reported to have advanced prices.

EUCALYPTUS OIL.—Weak on the spot; higher prices are asked for forward shipment.

MILK SUGAR has been in fair demand, but the price remains at a low level.

PARALDEHYDE is cheaper.

PHENOLPHTHALEIN.—The price has been cut to a low level.

SODA SALICYLATE is easier, in sympathy with salicylic acid.

VANILLIN is firm and in good demand.

Coal Tar Intermediates

There has been no great change in this market during the current week, and business has been on quiet lines and the prices remain steady.

ALPHA NAPHTHOL is unchanged.

ALPHA NAPHTHYLAMINE continues to be of interest at recent quoted figures.

ANILINE OIL AND SALT have attracted a fair amount of interest on both home and export accounts.

BENZIDINE BASE is quiet and the price unchanged.

BETA NAPHTHOL.—Some home trade business has been placed.

DIMETHYLANILINE has been enquired for on both home and export account.

DIPHENYLAMINE is of interest for export account and the price is firm.

"H" ACID is without special feature.

NITROBENZOL.—The price is unchanged, with inquiry for both home and export.

PARANITRANILINE has been quiet, the chief interest being on export account.

"R" SALT continues in moderate request.

RESORCINE.—Inquiries have been received for export.

XYLIDINE is without change.

Coal Tar Products

The market is very firm for all coal tar products.

90% BENZOL is quoted at 1s. 7d. per gallon on rails, and prices have a further upward tendency. Sellers are unwilling to sell for forward delivery, in view of the threatened further rise in the price of petrol.

PURE BENZOL is quoted at 1s. 11d. per gallon on rails.

CREOSOTE OIL is firm at 8d. to 8¼d. per gallon on rails in the North, while the price in London is from 9d. to 9¼d. per gallon.

CRESYLIC ACID is steady at 2s. to 2s. 1d. per gallon on rails for the pale quality 97/99%, whilst the dark quality is worth from 1s. 9d. to 1s. 10d. per gallon.

SOLVENT NAPHTHA is firm at 1s. 2d. to 1s. 3d. per gallon on rails. This product is also influenced by the threatened further rise in petrol, makers asking a premium for forward delivery.

HEAVY NAPHTHA is quoted at 1s. to 1s. 1d. per gallon on rails.

NAPHTHALENES have little fresh inquiry, the lower qualities being worth from £7 to £7 10s. per ton, 74/76 quality £8 to £8 10s. per ton, while 76/78 is worth from £9 to £9 10s. per ton.

PITCH is quietly steady, the demand is satisfactory, and prices are unchanged.

Sulphate of Ammonia

There is a good demand for home trade and for export, and prices are well maintained.

Low Temperature By-Products

MR. W. A. WALMSLEY addressed a meeting of the Royal Philosophical Society of Glasgow on Wednesday, March 12, on the subject of liquid by-products—tar and ammonia—obtained during the carbonisation of coal. He said that up till about twelve years ago gas was mainly produced in horizontal retorts at high temperature. The resulting tar was aromatic in composition, and contained benzene and benzene homologues, phenol and phenol homologues, naphthalene, anthracene, etc., in other words, all the bodies which were the starting points of the wonderful coal-tar dye industry. The introduction of newer methods of carbonisation in vertical retorts had brought about a complete change in the composition and properties of the tar produced. Low temperature carbonisation having in view the production of free burning smokeless fuel yielded thin tars that were characterised by high paraffin content, phenolic bodies of considerable molecular complexity, naphthenes or hexahydrobenzene homologoues with unsaturated side chains, and the absence of solid aromatic bodies, such as naphthalene, anthracene, phenacthrene, etc. Owing to its mode of formation in the vertical retort vertical tar occupied an intermediate position between the low and high temperature tars, and might be looked upon as a mixture of the two.

Several of the theories advanced to explain what took place during coal carbonisation and tar formation were briefly dealt with. By the aid of lantern slides the manufacturing operations involved in the distillation of tar and ammonia and the resulting products obtained therefrom were explained.

Current Market Prices

General Chemicals

	Per	£	s.	d.		£	s.	d.
Acetic anhydride, 90–95%	lb.	0	1	4	to	0	1	5
Acetone oil	ton	80	0	0	to	85	0	0
Acetone, pure	ton	120	0	0	to	123	0	0
Acid, Acetic, glacial, 99–100%	ton	73	0	0	to	74	0	0
Acetic, 80% pure	ton	51	0	0	to	53	0	0
Acetic, 40% pure	ton	26	0	0	to	27	0	0
Arsenic, liquid, 2000 s.g.	ton	85	0	0	to	88	0	0
Boric, commercial	ton	48	0	0	to	52	0	0
Carbolic, cryst. 39–40%	lb.	0	0	7¾	to	0	0	8
Citric	lb.	0	1	5½	to	0	1	6
Formic, 85%	ton	67	10	0	to	70	0	0
Hydrofluoric	lb.	0	0	7½	to	0	0	8½
Lactic, 50 vol.	ton	39	0	0	to	40	0	0
Lactic, 60 vol.	ton	45	0	0	to	47	0	0
Nitric, 80 Tw.	ton	23	0	0	to	25	0	0
Oxalic	lb.	0	0	5¾	to	0	0	6
Phosphoric, 1.5	ton	35	0	0	to	38	0	0
Pyrogallic, cryst.	lb.	0	5	9	to	0	6	0
Salicylic, technical	lb.	0	1	9½	to	0	2	0
Sulphuric, 92–93%	ton	6	0	0	to	7	0	0
Tannic, commercial	lb.	0	2	3	to	0	2	9
Tartaric	lb.	0	1	1½	to	0	1	2
Alum, lump	ton	12	10	0	to	13	0	0
Chrome	ton	23	0	0	to	24	0	0
Alumino ferric	ton	7	0	0	to	7	5	0
Aluminium, sulphate, 14–15%	ton	8	10	0	to	9	0	0
Sulphate, 17–18%	ton	10	10	0	to	11	0	0
Ammonia, anhydrous	lb.	0	1	6	to	0	1	8
.880	ton	32	0	0	to	34	0	0
.920	ton	22	0	0	to	24	0	0
Carbonate	ton	30	0	0	to	32	0	0
Chloride	ton	50	0	0	to	55	0	0
Muriate (galvanisers)	ton	32	0	0	to	33	0	0
Nitrate (pure)	ton	40	0	0	to	45	0	0
Phosphate	ton	63	0	0	to	65	0	0
Sulphocyanide, commercial 90%	lb.	0	1	5	to	0	1	6
Amyl acetate, technical	ton	280	0	0	to	300	0	0
Arsenic, white powdered	ton	66	0	0	to	68	0	0
Barium, carbonate, Witherite	ton	5	0	0	to	6	0	0
Carbonate, Precip.	ton	15	0	0	to	16	0	0
Chlorate	ton	65	0	0	to	70	0	0
Chloride	ton	14	10	0	to	15	0	0
Nitrate	ton	37	0	0	to	40	0	0
Sulphate, blanc fixe, dry	ton	20	10	0	to	21	0	0
Sulphate, blanc fixe, pulp	ton	10	5	0	to	10	10	0
Sulphocyanide, 95%	lb.	0	0	11	to	0	1	0
Bleaching powder, 35–37%	ton	10	0	0	to	10	10	0
Borax crystals, commercial	ton	25	0	0	to		—	
Calcium acetate, Brown	ton	13	0	0	to	14	0	0
Grey	ton	22	0	0	to	23	0	0
Carbide	ton	13	0	0	to	13	10	0
Chloride	ton	5	15	0	to	6	0	0
Carbon bisulphide	ton	35	0	0	to	40	0	0
Casein technical	ton	80	0	0	to	90	0	0
Cerium oxalate	lb.	0	3	0	to	0	3	6
Chromium acetate	lb.	0	1	1	to	0	1	3
Cobalt acetate	lb.	0	6	0	to	0	6	6
Oxide, black	lb.	0	9	6	to	0	10	0
Copper chloride	lb.	0	1	1	to	0	1	2
Sulphate	ton	25	0	0	to	25	10	0
Cream Tartar, 98–100%	ton	77	0	0	to	80	0	0
Epsom salts (*see* Magnesium sulphate)								
Formaldehyde, 40% vol.	ton	65	0	0	to	66	0	0
Formusol (Rongalite)	lb.	0	1	11	to	0	2	0
Glauber salts, commercial	ton	4	0	0	to	4	10	0
Glycerin crude	ton	65	0	0	to	67	10	0
Hydrogen peroxide, 12 vols.	gal	0	2	0	to	0	2	1
Iron perchloride	ton	20	0	0	to	22	0	0
Sulphate (Copperas)	ton	3	10	0	to	4	0	0
Lead acetate, white	ton	50	0	0	to	51	0	0
Carbonate (White Lead)	ton	50	0	0	to	52	0	0
Nitrate	ton	44	10	0	to	45	0	0
Litharge	ton	50	0	0	to	51	0	0
Lithophone, 30%	ton	22	10	0	to	23	0	0
Magnesium chloride	ton	4	0	0	to	4	5	0
Carbonate, light	cwt.	2	10	0	to	2	15	0
Sulphate (Epsom salts commercial)	ton	5	15	0	to	6	0	0
Sulphate (Druggists')	ton	9	0	0	to	10	0	0
Manganese Borate, commercial	ton	65	0	0	to	75	0	0
Sulphate	ton	45	0	0	to	48	0	0
Methyl acetone	ton	82	0	0	to	85	0	0
Alcohol, 1% acetone	ton	85	0	0	to	86	0	0
Nickel sulphate, single salt	ton	37	0	0	to	38	0	0
Ammonium sulphate, double salt	ton	37	0	0	to	38	0	0
Potash, Caustic	ton	33	0	0	to	34	0	0
Potassium bichromate	lb.	0	0	5½	to		—	
Carbonate, 90%	ton	30	0	0	to	31	0	0
Chloride, 80%	ton	9	0	0	to	10	0	0
Chlorate	lb.	0	0	3½	to		—	
Metabisulphite, 50–52%	ton	63	0	0	to	65	0	0
Nitrate, refined	ton	38	0	0	to	40	0	0
Permanganate	lb.	0	0	9½	to	0	0	10
Prussiate, red	lb.	0	1	10	to	0	2	0
Prussiate, yellow	lb.	0	0	9½	to	0	0	10
Sulphate, 90%	ton	10	0	0	to	10	10	0
Salammoniac, firsts	cwt.	2	15	0	to		—	
Seconds	cwt.	2	17	6	to		—	
Sodium acetate	ton	25	0	0	to	25	10	0
Arsenate, 45%	ton	45	0	0	to	48	0	0
Bicarbonate	ton	10	10	0	to	11	0	0
Bichromate	lb.	0	0	4½	to		—	
Bisulphite, 60–62%	ton	20	0	0	to	22	0	0
Chlorate	lb.	0	0	2¾	to	0	0	3
Caustic, 70%	ton	17	10	0	to	18	0	0
Caustic, 76%	ton	18	10	0	to	19	0	0
Hydrosulphite, powder	lb.	0	1	6	to	0	1	7
Hyposulphite, commercial	ton	10	10	0	to	11	0	0
Nitrite, 96–98%	ton	31	0	0	to	32	0	0
Phosphate, crystal	ton	16	0	0	to	16	10	0
Perborate	lb.	0	0	11	to	0	1	0
Prussiate	lb.	0	0	5¾	to	0	0	6
Sulphide, crystals	ton	8	10	0	to	9	0	0
Sulphide, solid, 60–62%	ton	15	0	0	to	16	10	0
Sulphite, cryst.	ton	11	10	0	to	12	0	0
Strontium carbonate	ton	50	0	0	to	55	0	0
Nitrate	ton	50	0	0	to	55	0	0
Sulphate, white	ton	6	10	0	to	7	10	0
Sulphur chloride	ton	25	0	0	to	27	10	0
Flowers	ton	11	0	0	to	11	10	0
Roll	ton	9	15	0	to	10	10	0
Tartar emetic	lb.	0	1	0	to	0	1	1
Tin perchloride, 33%	lb.	0	1	4	to	0	1	5
Perchloride, solid	lb.	0	1	5	to	0	1	6
Protochloride (tin crystals)	lb.	0	1	8	to	0	1	10
Zinc chloride 102° Tw.	ton	20	0	0	to	21	0	0
Chloride, solid, 96–98%	ton	25	0	0	to	30	0	0
Oxide, 99%	ton	42	0	0	to	45	0	0
Dust, 90%	ton	50	0	0	to	55	0	0
Sulphate	ton	15	0	0	to	16	0	0

Pharmaceutical Chemicals

Acetyl salicylic acid	lb.	0	3	6	to	0	3	9
Acetanilid	lb.	0	3	0	to	0	3	3
Acid, Gallic, pure	lb.	0	3	0	to	0	3	3
Lactic, 1.21	lb.	0	2	10	to	0	3	3
Salicylic, B.P.	lb.	0	2	2	to	0	2	4
Tannic, leviss	lb.	0	3	0	to	0	3	3
Amidol	lb.	0	7	6	to	0	8	0
Amidopyrin	lb.	0	13	9	to	0	14	3
Ammon ichthosulphonate	lb	0	1	10	to	0	2	0
Barbitone	lb.	0	16	0	to	0	16	6
Beta naphthol resublimed	lb.	0	3	0	to	0	3	6
Bromide of ammonia	lb.	0	0	10	to	0	1	0
Potash	lb.	0	0	8	to	0	0	8½
Soda	lb.	0	0	8½	to	0	0	9
Caffeine, pure	lb	0	12	3	to	0	12	9
Calcium glycerophosphate	lb.	0	5	9	to	0	6	0
Lactate	lb.	0	1	10	to	0	2	0
Calomel	lb.	0	3	4	to	0	3	6
Chloral hydrate	lb.	0	3	10	to	0	4	0
Cocaine alkaloid	oz.	1	1	0	to	1	2	6
Hydrochloride	oz.	0	17	0	to	0	17	6
Corrosive sublimate	lb.	0	2	10	to	0	3	0
Eucalyptus oil, B.P. (70–75% eucalyptol)	lb.	0	2	1	to	0	2	3
B.P. (75–80% eucalyptol)	lb.	0	2	2	to	0	2	4
Guaiacol carbonate	lb.	0	12	9	to	0	13	0
Liquid	lb.	0	11	6	to	0	12	0
Pure crystals	lb.	0	12	6	to	0	13	0
Hexamine	lb.	0	4	0	to	0	4	3
Hydroquinone	lb.	0	4	0	to	0	4	3
Lanoline anhydrous	lb.	0	0	7	to	0	0	6
Lecithin ex ovo	lb.	1	5	0	to	1	7	6
Lithi carbonate	lb.	0	9	6	to	0	10	0
Methyl salicylate	lb.	0	2	8	to	0	3	0
Metol	lb.	0	9	6	to	0	10	6
Milk sugar	cwt.	4	0	0	to	4	5	0
Paraldehyde	lb.	0	1	5	to	0	1	7
Phenacetin	lb.	0	6	9	to	0	7	0
Phenazone	lb.	0	7	6	to	0	8	0
Phenolphthalein	lb.	0	7	6	to	0	7	9
Potassium sulpho guaiacolate	lb.	0	6	3	to	0	6	9
Quinine sulphate, B.P.	oz.	0	2	3	to		—	

	Per	£	s.	d.		£	s.	d.
Resorcin, medicinal	lb.	0	6	0	to	0	6	6
Salicylate of soda powder	lb.	0	2	8	to	0	2	9
Crystals	lb.	0	2	9	to	0	2	10
Salol	lb.	0	4	0	to	0	4	3
Soda Benzoate	lb.	0	3	3	to	0	3	6
Sulphonal	lb.	0	17	6	to	0	18	3
Terpene hydrate	lb.	0	1	9	to	0	2	0
Theobromine, pure	lb.	0	12	0	to	0	12	3
Soda salicylate	lb.	0	8	6	to	0	9	0
Vanillin	lb.	1	4	6	to	1	5	6

Coal Tar Intermediates, &c.

Alphanaphthol, crude	lb.	0	1	9	to	0	2	0
Refined	lb.	0	2	3	to	0	2	6
Alphanaphthylamine	lb.	0	1	6½	to	0	1	7
Aniline oil, drums extra	lb.	0	0	8½	to	0	0	8¾
Salts	lb.	0	0	9	to	0	0	9¼
Anthracene, 40–50%	unit	0	0	8½	to	0	0	9
Benzaldehyde (free of chlorine)	lb.	0	2	9	to	0	3	0
Benzidine, base	lb.	0	4	4	to	0	4	7
Sulphate	lb.	0	3	4	to	0	3	7
Benzoic acid	lb.	0	2	0	to	0	2	3
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol	lb.	0	1	1	to	0	1	2
Betanaphthylamine, technical	lb.	0	4	0	to	0	4	3
Crocoine Acid, 100% basis	lb.	0	3	3	to	0	3	6
Dichlorbenzol	lb.	0	0	9	to	0	0	10
Diethylaniline	lb.	0	4	6	to	0	4	9
Dinitrobenzol	lb.	0	1	1	to	0	1	2
Dinitrochlorbenzol	lb.	0	0	10	to	0	0	11
Dinitronaphthalene	lb.	0	1	4	to	0	1	5
Dinitrotoluol	lb.	0	1	3	to	0	1	4
Dinitrophenol	lb.	0	1	6	to	0	1	7
Dimethylaniline	lb.	0	2	8	to	0	2	10
Diphenylamine	lb.	0	3	3	to	0	3	6
H-Acid	lb.	0	4	6	to	0	4	9
Metaphenylenediamine	lb.	0	4	0	to	0	4	3
Monochlorbenzol	lb.	0	0	10	to	0	1	0
Metanilic Acid	lb.	0	5	9	to	0	6	0
Metatoluylenediamine	lb.	0	4	0	to	0	4	3
Monosulphonic Acid (2.7)	lb.	0	8	6	to	0	9	6
Naphthionic acid, crude	lb.	0	2	4	to	0	2	6
Naphthionate of Soda	lb.	0	2	4	to	0	2	6
Naphthylamine-di-sulphonic-acid	lb.	0	4	0	to	0	4	3
Neville Winther Acid	lb.	0	7	3	to	0	7	9
Nitrobenzol	lb.	0	0	7	to	0	0	8
Nitronaphthalene	lb.	0	0	11½	to	0	1	0
Nitrotoluol	lb.	0	0	8	to	0	0	9
Orthoamidophenol base	lb.	0	12	0	to	0	12	6
Orthodichlorbenzol	lb.	0	1	0	to	0	1	1
Orthotoluidine	lb.	0	0	10	to	0	0	11
Orthonitrotoluol	lb.	0	0	3	to	0	0	4
Para-amidophenol, base	lb.	0	8	6	to	0	9	0
Hydrochlor	lb.	0	7	6	to	0	8	0
Paradichlorbenzol	lb.	0	0	9	to	0	0	10
Paranitraniline	lb.	0	2	6	to	0	2	8
Paranitrophenol	lb.	0	2	3	to	0	2	6
Paranitrotoluol	lb.	0	2	9	to	0	3	0
Paraphenylenediamine, distilled	lb.	0	12	0	to	0	12	6
Paratoluidine	lb.	0	5	6	to	0	5	9
Phthalic anhydride	lb.	0	2	6	to	0	2	9
Resorcin technical	lb.	0	4	0	to	0	4	3
Sulphanilic acid, crude	lb.	0	0	9	to	0	0	10
Tolidine, base	lb.	0	7	3	to	0	7	9
Mixture	lb.	0	2	6	to	0	2	9

Essential Oils and Synthetics

Essential Oils.		£	s.	d.
Anise	dearer, c.i.f. 2/4 spot	0	2	4½
Bay		0	10	6
Bergamot		0	16	6
Cajuput		0	3	3
Camphor, white	per cwt.	3	15	0
Brown	"	3	15	0
Cassia	c.i.f. 7/9 spot	0	8	6
Cedarwood		0	1	6
Citronella (Ceylon)	firm, c.i.f. 3/3 spot	0	3	7
(Java)	firm, c.i.f. 4/6 spot	0	4	9
Clove		0	8	6
Eucalyptus		0	2	3
Geranium Bourbon		1	10	0
Lavender		1	5	0
Lavender Spike	dearer	0	6	0
Lemon		0	3	2
Lemongrass	per oz.	0	0	2¼
Lime (distilled)		0	4	6
Orange sweet (Sicilian)		0	11	6
(West Indian)		0	9	6

		£	s.	d.
Palmarosa		0	18	0
Peppermint (American)		0	18	6
Mint (dementholised Japanese)		0	17	0
Patchouli		1	2	6
Otto of Rose	per oz.	1	15	0
Rosemary		0	1	11
Sandalwood		1	5	0
Sassafras		0	10	6
Thyme	2/6 to	0	8	0

Synthetics.				
Benzyl acetate	per lb.	0	3	3
Benzoate	"	0	3	6
Citral	"	0	10	0
Coumarine	"	1	0	0
Heliotropine	"	0	8	0
Ionone	"	1	5	0
Linalyl acetate	"	1	2	6
Methyl salicylate	"	0	2	9
Musk xylol	dearer "	1	0	0
Terpeniol	"	0	2	9

Storage of Liquid Air in Small Quantities

THE third and final report of the Mine Rescue Apparatus Research Committee just issued by the Department of Scientific and Industrial Research (obtainable through H.M. Stationery Office, price 1s. net) contains many interesting details relating to liquid air and oxygen rescue appliances and methods of storing liquified gases. There are a number of illustrations and charts showing various types of respirators and containers, and their efficiencies. The principle aimed at is that mine rescue stations should keep a certain amount of liquid air in store, and be supplied as required from a central manufacturing plant by motor lorry. This would enable the plant to work at something approaching its full capacity and probably enable the cost of the liquid air to be reduced to about 9d. per lb. For this purpose a number of storage vessels were investigated and are described in the report. These are of the Dewar vacuum type, carried out in various materials, and filled generally with activated charcoal. The difficulty of explosion resulting on puncturing the vessel accidentally, through the action which is very violent of the oxygen on the charcoal, has been investigated, and though the likelihood of this occurring is considered slight, colloidal silica is recommended as the most efficient substitute. Among other points dealt with in the report is the question of absorbing CO_2 in exhaled air by passing it over lump caustic soda, which was dealt with in a paper published by Dr. Gilchrist in the Proceedings of the Royal Society of Edinburgh. The greater part of the work referred to in the report was carried out under the direction of Professor Briggs in the laboratories of the Heriot-Watt College, Edinburgh.

Proposed Revision of Chinese Trade Mark Laws

A NUMBER of British firms trading in China, including Joseph Crosfield and Co., Lever Brothers, Ltd., the Asiatic Petroleum Co. and others, in a joint letter to *The Times* recently drew attention to the proposed new regulations regarding the registration of trade marks in China. It is pointed out that in Article 7 of the Mackay Treaty, ratified in 1903, China undertook to protect British trade marks, and to establish offices for their registration under the control of the Maritime Customs, which is officered by British and other foreign officials. The proposed law places trade marks under undiluted Chinese control, and lacks many of the essential safeguards provided for trade mark owners in Europe and America. Although the central government in China is at the moment unable to enforce its authority in the provinces, it is proposed to strip foreign property worth many millions of pounds of the safeguards which have hitherto protected it.

Article 15 of the Treaty of Tientsin of 1858 stipulates that all questions in regard to the rights, whether of property or person, arising between British subjects shall be subject to the jurisdiction of the British authorities.

Under the proposed law all decisions by the Chinese registration bureau would be final. In view of the way in which the proposal ignores treaty obligations the signatories appeal to Chambers of Commerce and other public bodies to support them in asking for effective foreign co-operation in the administration of the bureau and representation in all courts and tribunals affecting foreign trade mark interests.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, March 20, 1924.

The heavy chemical market has again experienced a quiet week, with only a very moderate number of inquiries.

Prices quoted for Continental products are, if anything, a little higher than a week ago. The prices of home manufactured articles remain fairly steady.

Industrial Chemicals

ACID ACETIC.—Unchanged. Glacial, 98/100%, £62 to £70 per ton; 80% pure, £51 to £53 per ton; 80% technical, £47 to £50 per ton, all packed in casks, delivered c.i.f. U.K. port, duty free. Moderate inquiry for export.

ACID BORACIC.—Crystals or granulated, £48 per ton; powdered, £50 per ton, carriage paid U.K. stations, minimum ton lots.

ACID CARBOLIC, ICE CRYSTALS.—Quoted 8d. to 8½d. per lb., carriage paid.

ACID CITRIC, B.P. CRYSTALS.—Inclined to be easier at 1s. 5¼d. per lb., less 5 per cent. carriage paid.

ACID FORMIC, 85%.—Unchanged at about £68 to £70 per ton, ex store. Offered for forward delivery at about £66 per ton, ex wharf.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC, 80°.—£23 10s. per ton, ex station, full truck loads.

ACID OXALIC.—Quoted 5½d. per lb., ex store, spot delivery. Offered from the Continent at a little less.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Price remains unchanged at 1s. 1½d. per lb., less 5 per cent. ex store. Offered for early delivery at about 1s. 1d. per lb., less 5 per cent. ex wharf.

ALUMINA SULPHATE, 17/18% IRON FREE.—Slightly cheaper quotations for forward delivery. Now offered at about £7 12s. 6d. per ton, c.i.f. U.K. port. Spot lots quoted £8 10s. per ton, ex store.

ALUM CHROME.—Potash chrome alum quoted about £27 per ton, ex station. Ammonium chrome alum about £20 to £21 per ton, ex store. Moderate inquiry for export.

ALUM POTASH (LUMP).—Quoted £10 15s. per ton, ex store, spot delivery. Offered from the Continent at about £9 10s. per ton, c.i.f. U.K. port.

AMMONIA, ANHYDROUS.—Unchanged at about 1s. 5½d. per lb., ex station, prompt delivery.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered U.K.

AMMONIA LIQUID, 88°.—Unchanged at 2½d. to 3d. per lb. delivered, according to quantity, containers extra.

AMMONIA MURIATE.—Grey galvanisers quality quoted £31 to £32 per ton, ex station. Fine white crystals offered from the Continent at £26 15s. per ton, c.i.f. U.K. port.

AMMONIA SULPHATE.—25¼%, £13 10s. per ton; 25¾%, £14 13s. per ton, ex works, prompt delivery.

ARSENIC WHITE POWDERED.—Spot lots unchanged at about £67 per ton, ex store. Offered for early delivery at about £65 per ton, ex wharf.

BARIUM CARBONATE, 98/100%.—White powder offered from the Continent at £11 15s. per ton, c.i.f. U.K. port, prompt shipment.

BARIUM CHLORIDE, 98/100%.—English material unchanged at about £14 10s. per ton, ex store; offered from the Continent at about £13 15s. per ton, c.i.f. U.K. port.

BARYTES.—Finest English white quoted £5 5s. per ton, ex works; Continental about £5 per ton, c.i.f. U.K. port.

BLEACHING POWDER.—Spot lots £11 per ton, ex station. Contracts, 20s. per ton less.

BORAX.—Granulated, £24 10s. per ton; crystal, £25 per ton; powdered, £26 per ton, carriage paid U.K. stations, minimum ton lots.

CALCIUM CHLORIDE.—English material unchanged at £5 12s. 6d. per ton, ex station. Continental quoted £4 17s. 6d. per ton c.i.f. U.K. port.

COPPERAS GREEN.—Moderate export inquiry, quoted £3 5s. per ton f.o.b. U.K. port, packed in casks.

COPPER SULPHATE.—Quoted £25 10s. per ton f.o.b. U.K. port for export. Spot lots of Continental material on offer at about £25 per ton, ex store.

FORMALDEHYDE, 40%.—Unchanged at £62 to £63 per ton, ex store, spot delivery, in little demand.

GLAUBER SALTS.—English material, £4 per ton, ex store or station. Continental offering at about £3 5s. per ton c.i.f. U.K. port.

LEAD, RED.—English manufacturers advise reduction in price. Now quoted £45 per ton, less 2½ per cent. carriage paid U.K. stations. Continental unchanged at about £43 per ton ex store, spot delivery.

LEAD, WHITE.—Continental material quoted £44 per ton ex store, spot delivery.

LEAD ACETATE.—White crystals unchanged at about £48 per ton ex store, spot delivery; brown about £46 10s. per ton ex store. White crystals offered from the Continent at £45 15s. per ton c.i.f. U.K. port, prompt shipment.

MAGNESITE CALCINED.—English ground material offered at £8 per ton, ex station. Moderate inquiry for export.

MAGNESIUM CHLORIDE.—Offered from the Continent at £3 15s. per ton c.i.f. U.K. port, prompt shipment. Spot lots quoted £4 2s. 6d. per ton, ex store.

MAGNESIUM SULPHATE (EPSOM SALTS).—Commercial quality offered at about £5 per ton, ex store. B.P. quality, £6 5s. per ton ex station, prompt delivery.

POTASH CAUSTIC, 88/92%.—Quoted £33 to £34 per ton ex store, spot delivery. Offered for delivery forward at about £31 per ton, ex wharf.

POTASSIUM BICHROMATE.—Unchanged at 5¾d. per lb. delivered.

POTASSIUM CARBONATE, 96/98%.—Spot lots unchanged at about £28 per ton, ex store. Offered from the Continent at £24 10s. per ton c.i.f. U.K. port.

POTASSIUM CHLORATE.—Little inquiry. Spot lots unchanged at about 3½d. per lb., ex store.

POTASSIUM NITRATE (SALTPETRE).—Offered from the Continent at £26 per ton, c.i.f. U.K. port, prompt shipment. Spot lots unchanged at about £31 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Unchanged at 9d. per lb., ex store, spot delivery.

POTASSIUM PRUSSIATE (YELLOW).—Unchanged at about 8¾d. per lb., f.o.b. U.K. port, or ex station. In little demand.

SODA CAUSTIC.—76/77%, £19 7s. 6d. per ton; 70/72%, £17 17s. 6d. per ton; 60/62% broken, £19 2s. 6d. per ton; 98/99% powdered, £22 15s. per ton. All ex-station, spot delivery. Contracts, 20s. per ton less.

SODIUM ACETATE.—Spot lots on offer at £24 5s. per ton, ex store. Offered from the Continent at £22 12s. 6d. per ton, c.i.f. U.K. port.

SODIUM BICARBONATE. — Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—English makers' price unchanged at 4½d. per lb., delivered.

SODIUM CARBONATE.—Soda crystals, £5 to £5 5s. per ton, ex quay or station; alkali, 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—English material quoted £10 per ton, ex station. Continental, about £9 10s. per ton, c.i.f. U.K. port. Pea crystals quoted £15 per ton, ex store.

SODIUM NITRATE.—Refined 96/98% quality, unchanged at £13 10s. to £13 15s. per ton, f.o.r. or f.o.b. U.K. port.

SODIUM NITRITE, 100%.—Quoted £27 to £28 per ton, according to quantity, f.c.b. U.K. port.

SODIUM PRUSSIATE (YELLOW).—Unchanged at about 5d. per lb., f.o.b. U.K. port. Spot lots on offer at about 5¼d. per lb., ex store.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption, £4 5s. per ton, carriage paid stations. Good export inquiry.

SODIUM SULPHIDE.—English manufacturers advise reduction in price; 60/65% solid, now £14 15s. per ton, ex station; broken, £1 per ton more; flake, £2 per ton more; 60/62%, offered from the Continent at £13 12s. 6d. per ton, c.i.f. U.K. port. 31/34% crystals, English make, quoted £9 2s. 6d. per ton, ex station. Offered from the Continent at about £9 per ton, c.i.f. U.K. port.

SULPHUR.—Flowers, £10 per ton; roll, £9 per ton; rock, £9 per ton; ground, £8 per ton. Prices nominal.

TIN CRYSTALS.—Unchanged at 1s. 3d. per lb., f.o.b. U.K. port.

ZINC CHLORIDE, 98/100%.—Quoted £25 10s. per ton, f.o.b. U.K. port for export.

ZINC SULPHATE.—English material quoted £13 10s. per ton, ex store. Offered from the Continent at £12 per ton, c.i.f. U.K. port.

NOTE.—The above prices for bulk business, and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

BENZALDEHYDE.—Market quiet. Price 2s. 4d. lb., delivered.

CLEVE ACID.—Small home inquiry. Price 3s. 6d. lb., 100% basis.

DIMETHYLANILINE.—Good export inquiry. Price 2s. 4½d. lb., f.o.b., drums included.

ETHYL BENZYL ANILINE.—Some inquiry. Price 6s. 3d. lb., delivered.

META PHENYLENEDIAMINE.—Some export inquiry. Price 4s. 6d. lb., f.o.b.

ORTHO TOLUIDINE.—Small export inquiry. Price 10d. lb., drums included.

PARA PHENYLENEDIAMINE.—Export inquiry. Price 10s. 4d. lb., 100% basis.

TOLIDINE BASE.—Export inquiry. Price 7s. lb., 100% basis.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

AGENCIES REQUIRED IN BELGIUM FOR INDUSTRIAL CHEMICALS, ETC.—A well-recommended commission agent, resident in Liege, wishes to get into touch with British exporters of lead, brass, aluminium, special steels, nickel, tin, Kieselguhr, magnesia and industrial chemicals, with a view to representing them on a commission basis. (Reference No. 307.)

TENDERS INVITED FOR PUMPING PLANT FOR MEHALLA EL KOBRA.—The Commercial Secretary at Cairo reports that the Egyptian Ministry of the Interior is inviting tenders, to be presented by May 31, 1924, for the supply, delivery and erection of pumps and accessories and filters, including alum distributing apparatus for water installation at Mehalla el Kobra. (Reference No. D.O.T., 12,686/F.E./E.C./2.)

Tariff Changes

INDIA.—A notification issued by the Government reduces from 23 to 21 rupees per cwt. the tariff valuation for use in assessing the Customs duty on caustic soda, flake, imported into India.

UNION OF SOUTH AFRICA.—Salt imported for bacon curing or the dairy industry is to be allowed a rebate of 17 per cent. *ad valorem*, provided it does not contain more than a specified amount of magnesium, calcium, sulphur oxide, and insoluble matter.

A Great American Chemist

DR. C. W. ELIOT, described as one of the greatest living Americans, has reached the age of 90 years. Primarily a chemist he was for forty years head of Harvard University, and was previously professor at the Massachusetts Institute of Technology. He was identified with new methods in education, and introduced the elective system at Harvard, by which the student chooses his own group of subjects. Liberal in outlook and principle, he is said always to have taken a strong and in some ways dictatorial line in public and university affairs.

The Manchester Chemical Market

[FROM OUR OWN CORRESPONDENT.]

Manchester, March 20, 1924.

CONDITIONS here since last report have not changed very much one way or the other and business can only be described as moderate. Buyers for the home trade are not committing themselves very extensively and most of the business is for immediate requirements. A fair number of inquiries for shipment are reported, but actual transactions at the moment are not heavy, Dominion buyers being the most prominent. Continental trade is small. Values in some cases are easy and further concessions have been made since last week.

Heavy Chemicals

Sulphide of sodium keeps quiet and values are weak; 60-65 per cent. concentrated solid is quoted at £14 15s. per ton and crystals at £9 5s. Prussiate of soda likewise is a dull section of the market and offers are on a lower basis, about 5d. per lb. now being quoted. Hyposulphite of soda is unchanged from last week at £15 per ton for photographic crystals and £9 5s. for commercial, although demand continues on a small scale. Alkali is fairly active for both branches of trade, 58 per cent. material offering at £6 15s. per ton. Galuber salts are quiet but without quotable change at about £3 10s. per ton. Bleaching powder keeps steady at round £10 per ton, but only a moderate amount of business is being done. Caustic soda is in fair demand for home consumption and also for shipment, values ranging from £16 17s. 6d. for 60 per cent. strength to £19 7s. 6d. per ton for 76-77 per cent. Saltcake also enjoys a fairly good inquiry on export account, although the home demand is on a quiet scale, values for the latter being about £4 10s. per ton. Soda crystals continue in small demand with prices fairly steady at £5 5s. per ton. Phosphate of soda still fails to attract much buying interest and values are again easier, an average figure to-day being £13 15s. per ton. Chlorate of soda is easy at 2¾d. per lb., the demand being quiet. Acetate of soda is not an active section but the price is maintained at round £23 10s. per ton. Nitrate of soda keeps rather scarce and firm at £28 10s. per ton. Bicarbonate of soda is steady at £10 10s. per ton, a moderate amount of business being put through. Bichromate of soda is fairly active with prices unchanged at 4½d. per lb.

Both caustic potash and carbonate of potash are showing a rather weaker tendency. Caustic potash, 90 per cent. material, is offering at about £29 per ton, with carbonate, 96 per cent., quoted at £24 to £25 per ton. Permanganate of potash is quiet and easy at 7½d. to 8½d. per lb. according to quality. Bichromate of potash is in quietly steady demand at 5¾d. per lb. Chlorate of potash continues weak at 2¾d. to 3d. per lb., the demand for this material showing little sign of expansion. Yellow prussiate of potash is quiet but unchanged at 8¼d. per lb.

In the absence of any important transactions in arsenic prices are easy; white powdered, Cornish makes, is quoted this week at £64 to £65 per ton, Manchester. Sulphate of copper is moving very slowly and values are still weak, ranging from £24 to £24 10s. per ton, f.o.b. Commercial Epsom salts are steady and in moderate demand at £4 10s. per ton for British makes, with magnesium sulphate, B.P., on offer at £6 10s. Grey acetate of lime is rather easier at £20 to £21, with brown scarce at £14 10s. to £15 per ton. Acetate of lead continues firm in sympathy with the metal; white is quoted at £49 to £50 and brown £48 per ton. Nitrate of lead is also well held at £44 per ton.

Acids and Tar Products

Tartaric acid is quiet but unchanged at 1s. 1½d. to 1s. 2d. per lb. Citric acid is quoted at 1s. 5½d. per lb. Acetic acid is steady at £48 per ton for 80 per cent. commercial and £70 per ton for glacial, a moderate amount of business being put through. Oxalic acid is dull and easy at 5½d. per lb.

The renewed strength of most of the coal-tar products is maintained, though this appears to be due rather to firmer holders than to any great extension of buying. Pitch is steady at £3 10s. per ton Manchester. Creosote oil is offering at 8½d. per gallon. Crude carbolic acid is quoted at 2s. 3d. per gallon and crystal at about 8½d. per lb. Solvent naphtha is firmer at 1s. 4d. per gallon. Naphthalene is steady at £16 to £17 per ton for refined and £7 and upwards for crude.

New Chemical Trade Marks

Applications for Registration

(This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, 51 and 52, Chancery Lane, W.C.2, from whom further information may be obtained.

Opposition to the Registration of the following Trade Marks can be lodged up to April 19, 1924.)

GAIETY.

445,223. For paints, dry colours, distempers, enamels, varnishes, japans, and anti-corrsive oils. R. Gay and Co., Ltd., Langthorne Works, Stratford Market, London, E.15, and 24, Grosvenor Gardens, London, S.W.1, paint and enamel manufacturers. February 8, 1924.

INOTYOL.

445,105. For chemical substances prepared for use in medicine and pharmacy. Société Anonyme des Laboratories Innoxa (a Joint Stock Company registered under the laws of the Republic of France), 35, Rue des Petitschamps, Paris.

SOLAMIN.

437,041–2. For dyes. Aktien-Gesellschaft für Anilin Fabrikation (a joint stock company organised under the laws of Germany), an der Treptower Brücke, Berlin, Germany, manufacturers. May 10, 1923. (To be associated, Section 24.

SCALEXE.

445,034. For preparations for the prevention or removal of scale from boilers. Pickles, Ayland and Co., Ltd., Sowdil) Works, Wesley Street, Ossett, Yorkshire, manufacturing chemists. February 2, 1924.

YOUNG'S LYSOL.

B433,040. For lysol used for disinfectant purposes. Robert Young and Co., Ltd., 38, Elliot Street, Glasgow, manufacturers. January 6, 1923. Official notices: "User claimed from January 19, 1915. Evidence has been supplied that the mark is in fact capable of distinguishing the goods."

444,592. For sulphate of copper for agricultural and horticultural use, produced in Great Britain. Jules de Gay, Suffolk House, 5, Laurence Poutney Hill, Cannon Street, London, E.C.4, merchant. January 18, 1924. (By consent.) Official notice: "Registration of this trade mark shall give no right to the exclusive use of the word 'Britannia.'"

AMOVON.

443,329. For chemical substances prepared for use in medicine and pharmacy. Wynter Bros. and Co., Ltd., Low Green Works, 18 and 20, Low Green Terrace, Great Horton, Bradford, Yorkshire, wholesale and export druggists. December 5, 1923. (To be associated, Section 24.)

RISMUTHYL.

445,283. For chemical substances prepared for use in medicine and pharmacy. Société Anonyme des Produits Chimiques et Pharmaceutiques Meurice (a corporation organised and existing under the laws of Belgium), 68, Rue Berkendael, Brussels, Belgium, manufacturers of chemical and pharmaceutical products. February 9, 1924.

BISMOGENOL.

444,974. For chemical substances prepared for use in medicine and pharmacy. E. Tosse and Co., Incorporated (a corporation organised under the laws of the State of New York, United States of America), 90 to 96, Wall Street, New York, United States of America, manufacturing chemists. January 31, 1924.

NAPSOL.

444,043. For a distillate of mineral oil used in course of manufacture and supply of coal gas for dissolving naphthalene in mains and service pipes. British Tar Products, Ltd., 301, Glossop Road, Sheffield, and 11 and 12, Pall Mall, London, S.W.1, distillers of coal tar. January 1, 1924.

Company News

TARMAC, LTD.—The directors recommend a final dividend of 11¼ per cent., free of tax, making, with the interim dividend, 15 per cent., free of tax, for the year.

BENZOL AND BY-PRODUCTS, LTD.—The transfer books will be closed from March 24 to March 31, inclusive, for the preparation of preference dividend warrants.

PARKE'S DRUG STORES.—A dividend on the preference shares for the half year to February 29 at the rate of 6 per cent. per annum, less tax, is announced, payable on March 20.

W. J. BUSH AND CO., LTD.—The share and debenture transfer books are closed until March 31 for the preparation of the debenture interest and preference dividend warrants.

ASBESTOS CORPORATION OF CANADA.—It is announced that the directors have declared a dividend of 1½ per cent. on the preferred stock for the quarter ending March 31, payable on April 15.

BARRY, OSTLERE AND SHEPHERD, LTD.—The directors recommend a dividend of 15 per cent. plus a bonus of 2s. per share, both less tax, on the ordinary capital for the year to January 31 last, the same as the previous year.

BRITISH PORTLAND CEMENT MANUFACTURERS, LTD.—The share registers and books of transfer of the 6 per cent. preference shares and of the ordinary shares were closed on March 17, and will remain closed until March 31, inclusive.

BRITISH METAL CORPORATION, LTD.—At the annual meeting held in London last week the chairman in the course of his speech said that so far as statistics could prove anything, the world's consumption of non-ferrous metals was now on a larger scale than in the years immediately preceding the war, while production was progressing at a slightly lower ratio. Copper was the only metal where stocks were increasing.

UNITED ALKALI CO., LTD.—At the annual meeting of the shareholders held in Liverpool on Wednesday, speeches reviewing the position of the British chemical and dyestuffs industries were made by Sir Max Muspratt and Dr. G. C. Clayton, M.P., a full report of which will appear next week. Sir Max Muspratt, Sir Edward A. Brotherton and Mr. James Tennant were unanimously elected directors.

UNITED DRUG COMPANY OF AMERICA.—The report for the year 1923 shows that the trading profit is $6,515,500, as against $5,811,100 for the previous year, and after allowing for depreciation; interest charges and other payments, there is a net profit of $4,164,800. Nothing was paid on the common stock in 1922, but 3 per cent. was forthcoming last year. The accumulated surplus carried forward is $4,516,900, or $1,596,500 more than was brought in.

BRITISH ALUMINIUM CO., LTD.—The accounts for the year to December 31 last show a profit, including the amount brought forward, after making provision for taxation, charging the service of the prior lien debentures and the debenture stock, and further setting aside £50,000 to depreciation reserve and £60,000 to the reserve fund, and setting aside £10,000 for the creation of a staff benefit fund, of £111,123. After providing for the dividend on the preference shares, and for the interim dividend at the rate of 5 per cent. per annum on the ordinary shares, the directors recommend a final dividend at the rate of 10 per cent. per annum on the ordinary shares, making 7½ per cent. for the year, leaving £18,071 to be carried forward. For each of the two preceding years the dividend on the ordinary shares was 5 per cent.

DOMINION TAR AND CHEMICAL CO., LTD.—The accounts for the half-year ended December 31 last show that, including £1,021 brought in, and after allowing £24,025 for depreciation, there is a profit of £46,614. It is proposed to pay a final dividend for the six months of 2½ per cent., free of tax (making 5 per cent. for the half-year, the same as for the latter half of 1922), and also a bonus of 2½ per cent., free of tax. The total distribution for the whole of 1923 is therefore 12½ per cent., free of tax. It is further proposed to place £20,000 to general reserve, leaving £7,864 to be carried forward. The report states that, owing to the general expansion of the business and of the subsidiaries, it is proposed to increase the capital and this matter will form the subject of a special circular to the shareholders. The annual meeting will be held at 361, Salisbury House, London Wall, E.C., on March 24, at 11.30 a.m.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

HUBAND, MR. W. L., The Outlook, Broadoaks Road, Solihull, manufacturing chemist. (C.C., 22/3/24.) £17 14s. 6d. February 6.

HUTCHINSON, L. AND E. AND CO., Newlin Chemical Works, Breightmet Street, Bolton, chemical manufacturers. (C.C., 22/3/24.) £20 16s. January 30.

SOUTHERN WHOLESALE SUPPLY CO., 161, High Street, Southampton, chemical manufacturers. (C.C., 22/3/24.) £25 December 12.

WATERSIDE DYEING CO., Waterside Mill, Hebden Bridge, dyers. (C.C., 22/3/24.) £43 14s. 4d. February 5.

WHITE BAND MANUFACTURING CO., LTD., 20, Pump Pail, Croydon, manufacturing chemists. (C.C., 22/3/24.) £11 13s. 6d. February 4.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

MAJOR AND CO., LTD., London, W.C., chemical manufacturers. (M., 22/3/24.) Registered March 8, debentures, to Bank; general charge. *£12,500. July 7, 1922.

Satisfaction

PRITCHARD (J. D.) AND CO., LTD., Swansea, manufacturers of oxalic acid. (M.S., 22/3/24.) Satisfaction registered March 8, £10,000, registered February 26, 1913.

Receivership

BURLINGTON INDUSTRIAL LABORATORIES, LTD. (R., 22/3/24.) F. A. Davies, of 41, Etheldene Avenue, Muswell Hill, N., was appointed receiver on March 6, 1924, under powers contained in debentures dated September 5, 1921.

OLPENA, LTD. (R., 22/3/24.) H. Hackett, of 448, Strand, W.C., was appointed receiver and manager on March 1, under powers contained in debentures dated January 11, 1924.

London Gazette

Company Winding Up Voluntarily

CHESTER (A. D.) AND CO., LTD. (C.W.U.V., 22/3/24.) W. Abbott, 80a, Coleman Street, London, E.C.2, chartered accountant, appointed liquidator.

Bankruptcy Information

HALL, Harry Herbert, lately carrying on business at Sladen Dye Works, Littleborough, dyer and finisher. First meeting March 27, 3 p.m., Official Receiver's Offices, Byrom Street, Manchester. Public examination, April 25, 2 p.m., County Police Court, Buckley Place, Rochdale.

Notice of Intended Dividend

BROOKS, Tom Cheetham (trading as R. CHEETHAM AND CO.), 25 and 54, George Street, and 4, Chorlton Street, Manchester, chemist and analyst. Last day for receiving proofs, March 31. Trustees, A. T. Eaves, 15, Fountain Street, Manchester, and R. Heatley, 33, Brazennose Street, Manchester.

New Companies Registered

BECKER AND CO (1924), LTD. Merchants and agents for the sale and purchase of woodpulp and other material used in the manufacture of paper. Nominal capital, £120,000 in 100,000 7½ per cent. preference cumulative preference shares of £1 each, and 400,000 ordinary shares of 1s. each. Solicitors: J. D. Langton and Passmore, 57, Old Broad Street, London.

EWELL McALLEN, LTD., match manufacturers and merchants. Nominal capital £1,000 in 950 6 per cent. cumulative participating preference shares of £1 each and 500 deferred ordinary shares of 2s. each. Solicitors: C. R. Enever and Co., Broad Street House, London, E.C.2.

GLEVEOIL CO., LTD., 143, Westgate Street, Gloucester. Importers and refiners of and dealers in motor, lubricating and crude oils, linseed and edible oils, etc. Nominal capital, £5,000 in £1 shares.

HAMONITE, LTD., Marconi House, Strand, London. Manufacturers of and dealers in activated carbon and any form of carbon and any carbonaceous materials and fuel or material capable of being converted into fuel; dealers in peat, steel and other minerals, tar, pitch, artificial manures, etc. Nominal capital £200,000 in 80,000 7 per cent. cumulative participating preference and 120,000 ordinary shares of £1 each.

MARSTON AND CO. (LIVERPOOL), LTD., 20, Freemason's Road, Liverpool. Oil and grease manufacturers. Nominal capital, £3,000 in £1 shares.

POCHIN'S AND PAPER MAKERS' CHEMICALS, LTD. 13, Worsley Street, Salford, Manchester. To carry on the business as indicated by the title, and that of importers and manufacturers of and dealers in rosin, size and refined and crude rosin, etc. Nominal capital £12,000 in £1 shares.

New Type of Experimental Colloid Mill

THE Plauson Mill and Filter Press Co., Ltd., of 17, Waterloo Place, Pall Mall, S.W.1, announce a small colloid mill of less expensive design, adapted to the treatment of small quantities, and primarily intended for the purpose of facilitating research and the application of colloid chemistry to industrial purposes. The rotor has a peripheral speed of 4,000 f.s., and with charges of about 1 litre requires about 10 h.p. to drive, while 15 h.p. will cover most possible uses. The weight is approximately 3½ cwt., the driving pulley 4 in. in diameter, and the normal working speed 4,750 r.p.m. Expensive foundations are not required. In addition to its functions as a superfine grinder, intensive mixer, etc., on a research scale, it has an output capacity for most emulsions on a factory production scale. Continuous automatic circulation in conjunction with feed tanks can be employed for large outputs or intermittent hand feeding for research operations. Difficult solutions and several chemical reactions may be accelerated. The Plauson Colloid Mill can be seen and tried in London and Manchester.

Institution of Petroleum Technologists

THE sixth annual dinner of the Institution of Petroleum Technologists was held in London on Tuesday, Mr. H. Barringer presiding. Professor J. S. S. Brame, proposing the toast of "The Services," said that the Navy was mainly dependent upon oil, the Army was transported by oil, and the Royal Air Force owed its birth to oil. Engineer Vice-Admiral Sir Robert Dixon, replying, said that the Services owed much to the institution for its work, especially in the classification of oils. Sir Westcott Abell, proposing the toast of "The Petroleum Industry," said that the advance that had been made in the last generation was marvellous. Thirty years ago the total production of oil was only 10,000,000 tons, whereas last year it was thirteen times that amount. Mr. A. Beeby Thompson, in responding, referred to the difficulties of oil prospecting, and said that those in charge of petroleum policy were working hard to reduce the cost and to obtain cheaper products.